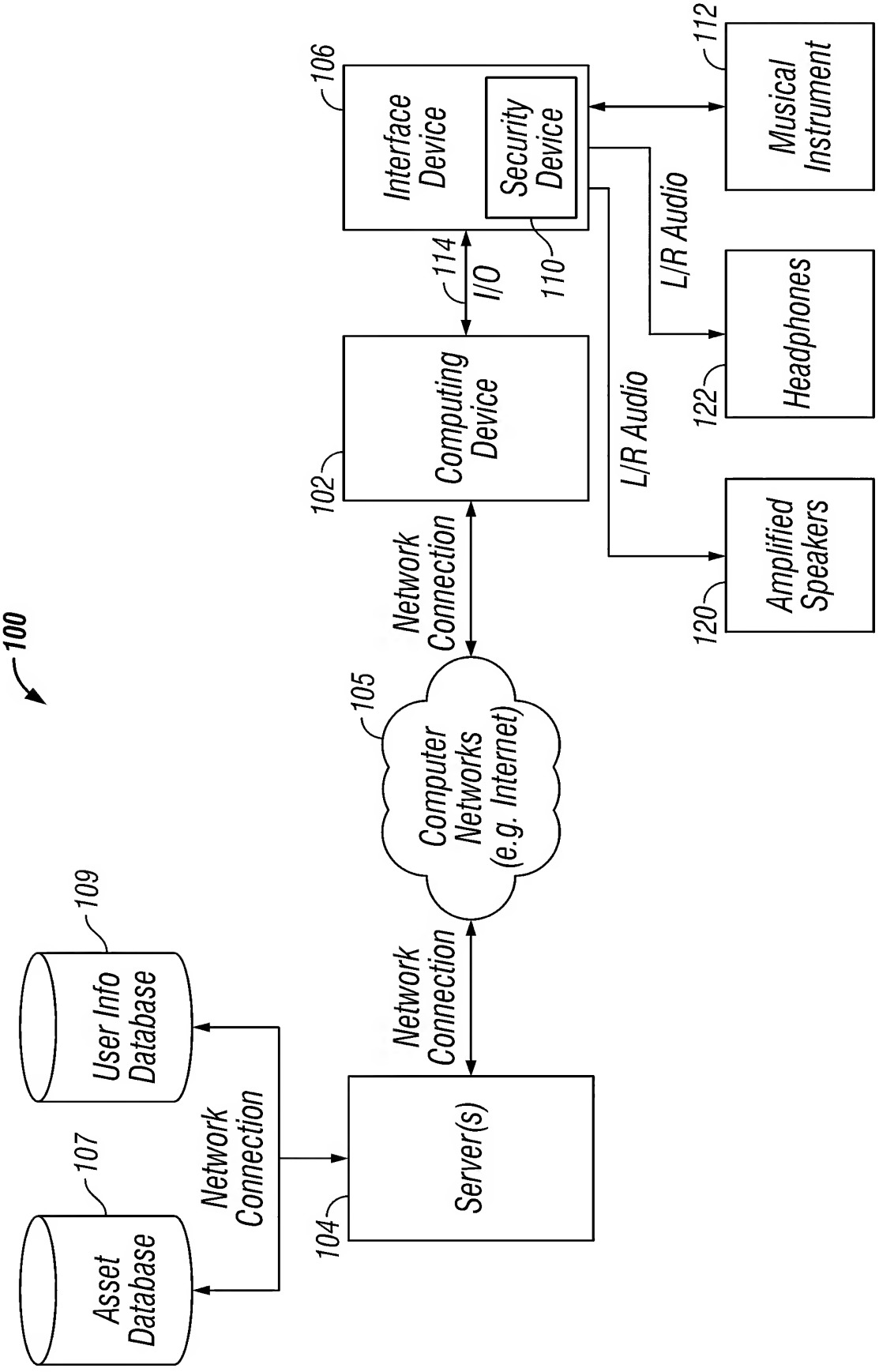

100
Asset Database
107
User Info Database
109
Network Connection
Server(s)
104
Network Connection
Computer Networks (e.g. Internet)
105
Network Connection
Computing Device
102
I/O
114
Interface Device
106
Security Device
110
L/R Audio
L/R Audio
Amplified Speakers
120
Headphones
122
Musical Instrument
112

FIG. 1

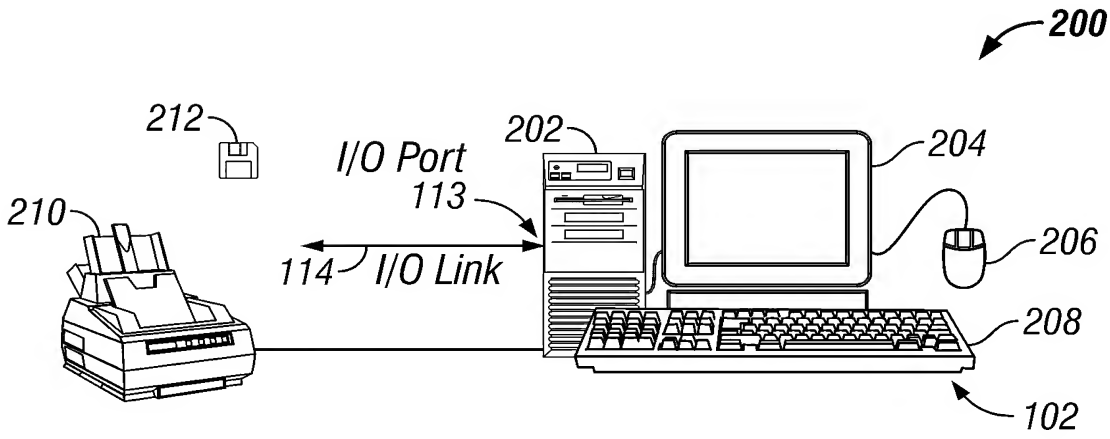

200
212
202
I/O Port
113
204
210
114
I/O Link
206
208
102

FIG. 2a

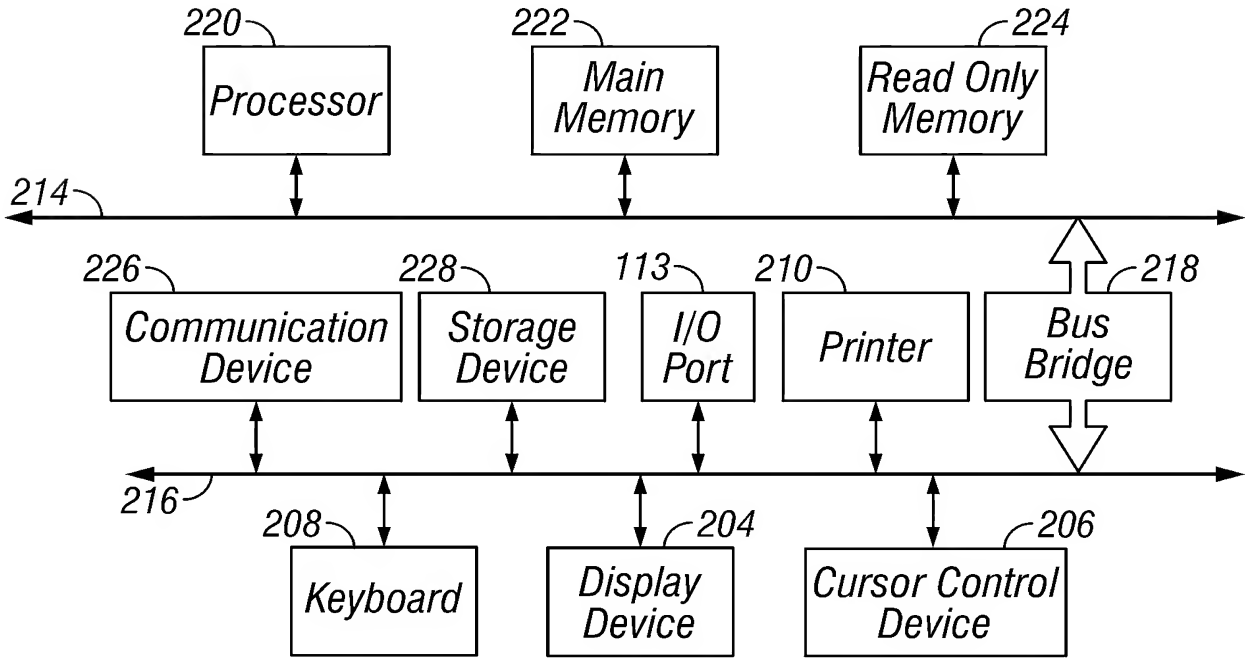

220
Processor
222
Main Memory
224
Read Only Memory
214
226
Communication Device
228
Storage Device
113
I/O Port
210
Printer
218
Bus Bridge
216
208
Keyboard
204
Display Device
206
Cursor Control Device

FIG. 2b

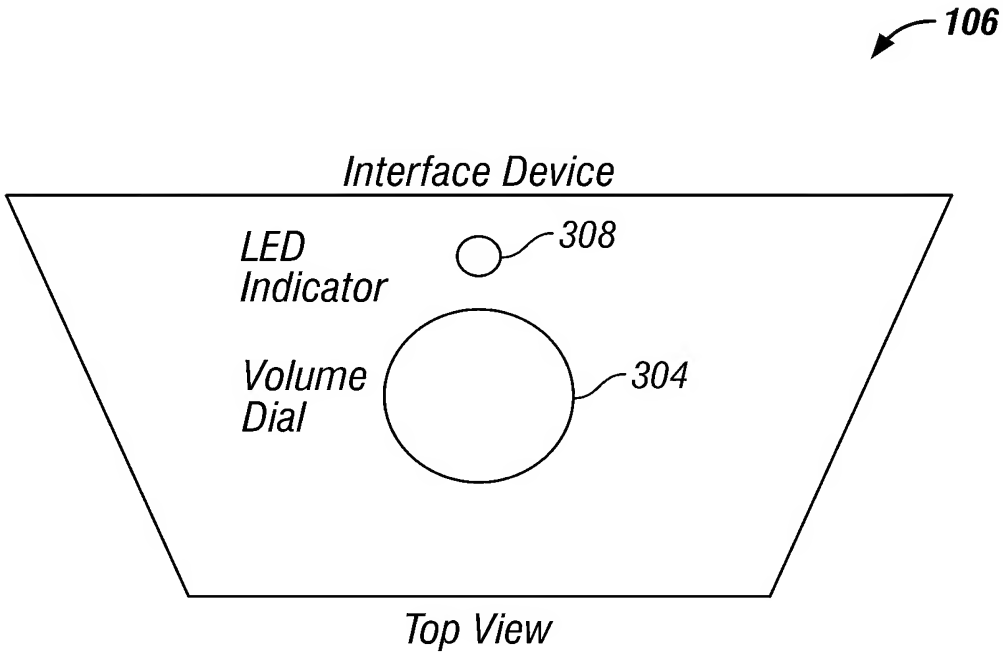


FIG. 3a

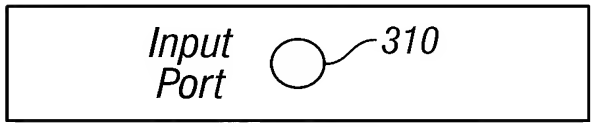


FIG. 3b

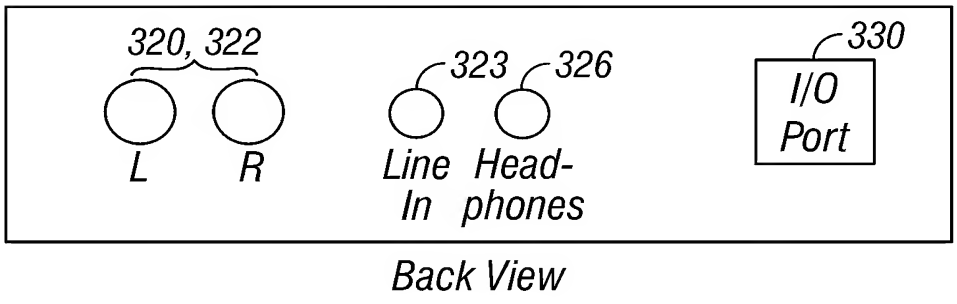


FIG. 3c

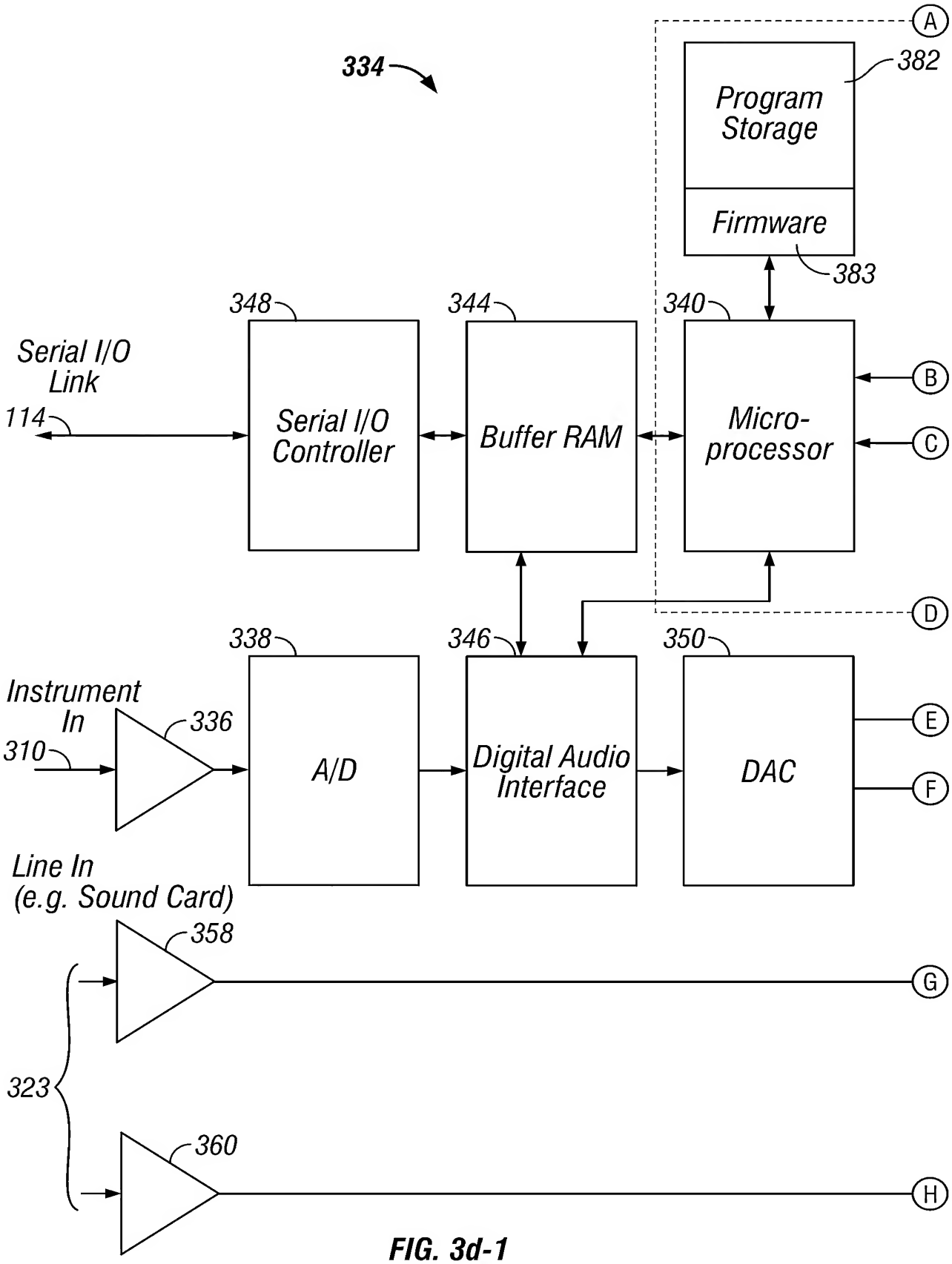

334
A
382
Program Storage
Firmware
383
348
344
340
Serial I/O Link
114
Serial I/O Controller
Buffer RAM
Micro-processor
B
C
D
338
346
350
Instrument In
310
336
A/D
Digital Audio Interface
DAC
E
F
Line In (e.g. Sound Card)
358
G
323
360
H

FIG. 3d-1

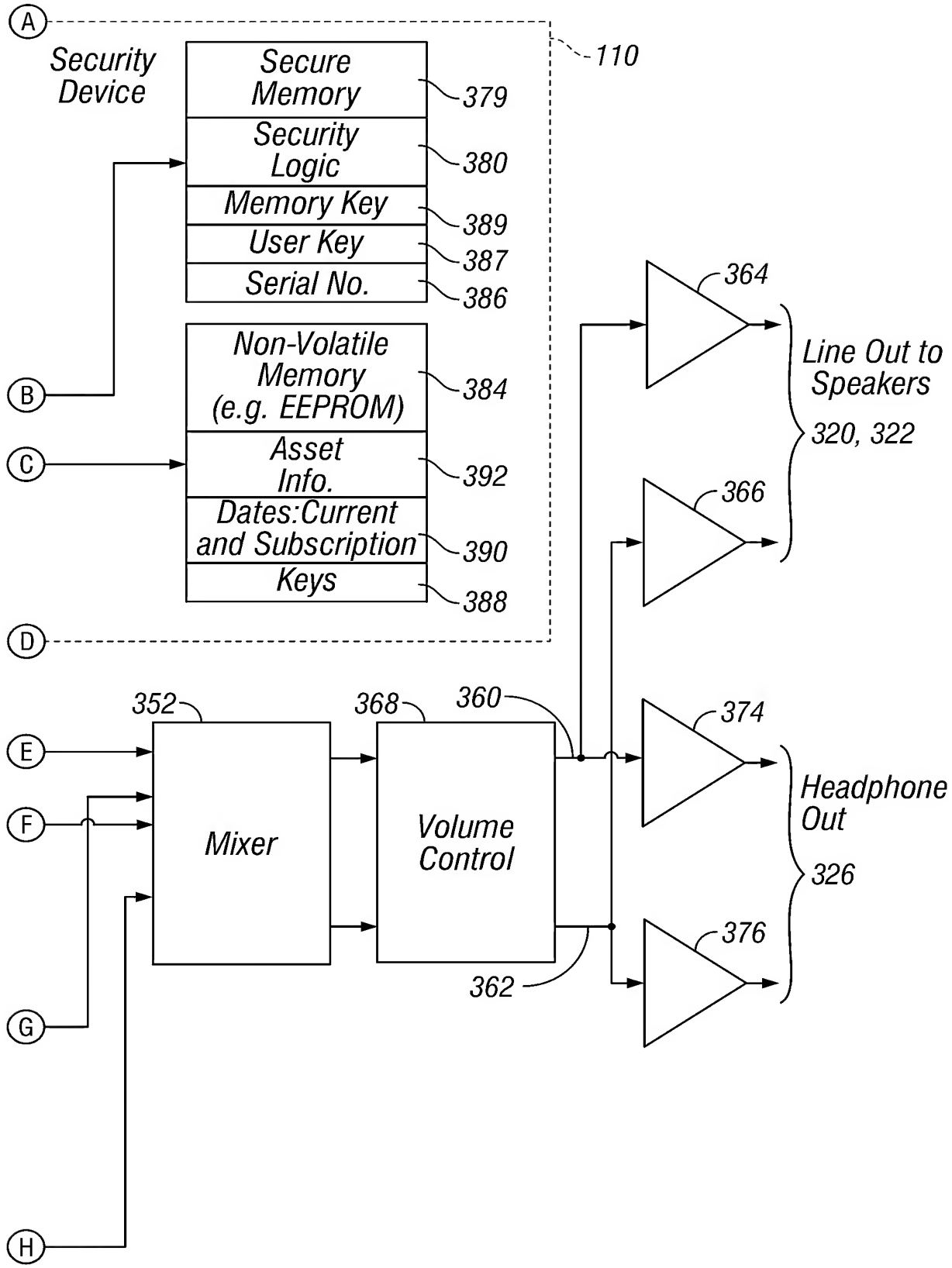

A
Security Device
Secure Memory
379
Security Logic
380
Memory Key
389
User Key
387
Serial No.
386
110
Non-Volatile Memory (e.g. EEPROM)
384
Asset Info.
392
Dates:Current and Subscription Keys
390
388
B
C
D
364
366
Line Out to Speakers
320, 322
352
368
360
374
376
Mixer
Volume Control
362
Headphone Out
326
E
F
G
H

FIG. 3d-2

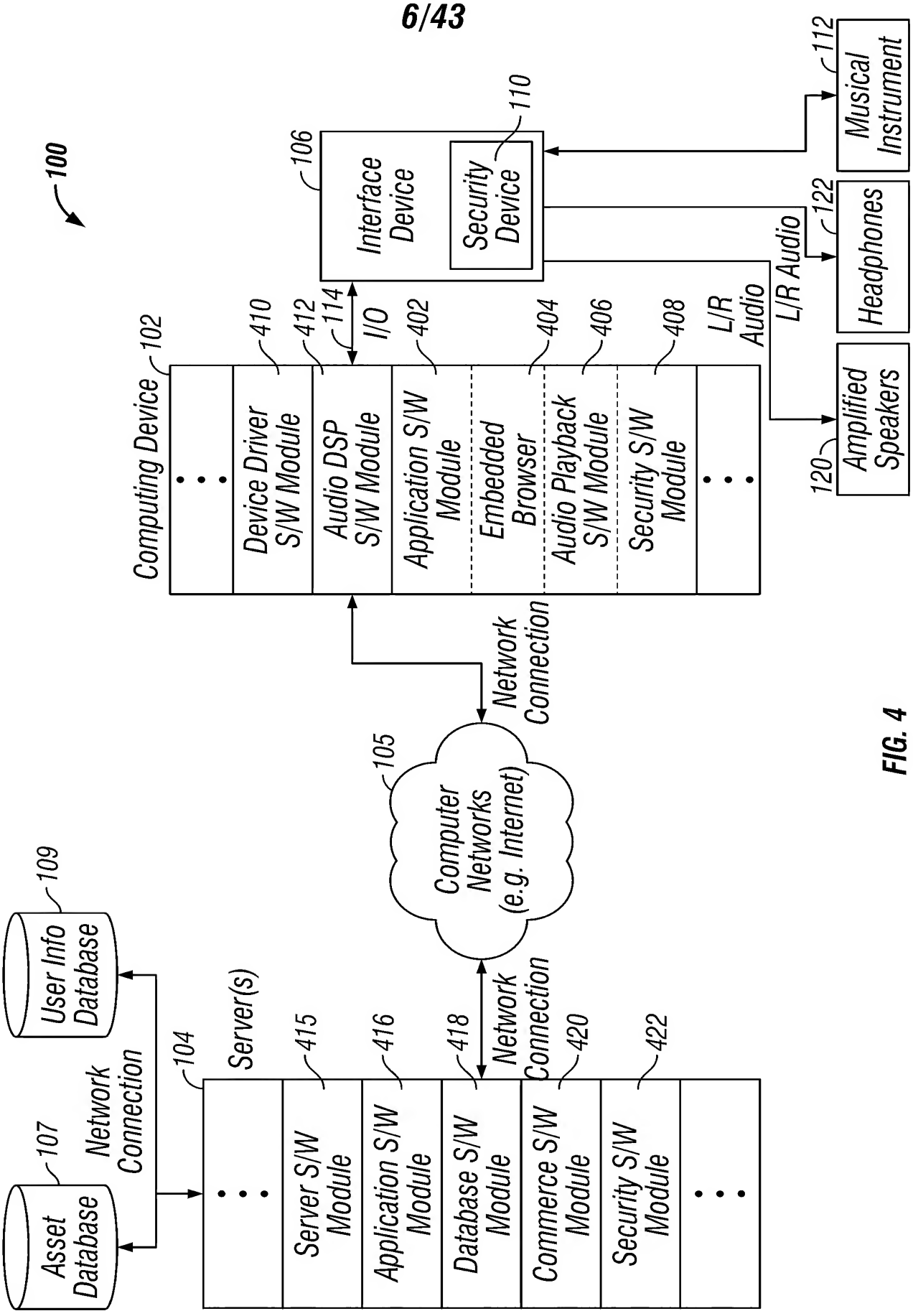

100
Computing Device
102
Device Driver S/W Module
410
Audio DSP S/W Module
412
I/O
114
Application S/W Module
402
Embedded Browser
404
Audio Playback S/W Module
406
Security S/W Module
408
L/R Audio
Interface Device
106
Security Device
110
Musical Instrument
112
Headphones
122
L/R Audio
Amplified Speakers
120
Network Connection
Computer Networks (e.g. Internet)
105
Server(s)
104
Server S/W Module
415
Application S/W Module
416
Database S/W Module
418
Network Connection
Commerce S/W Module
420
Security S/W Module
422
User Info Database
109
Asset Database
107
Network Connection

FIG. 4

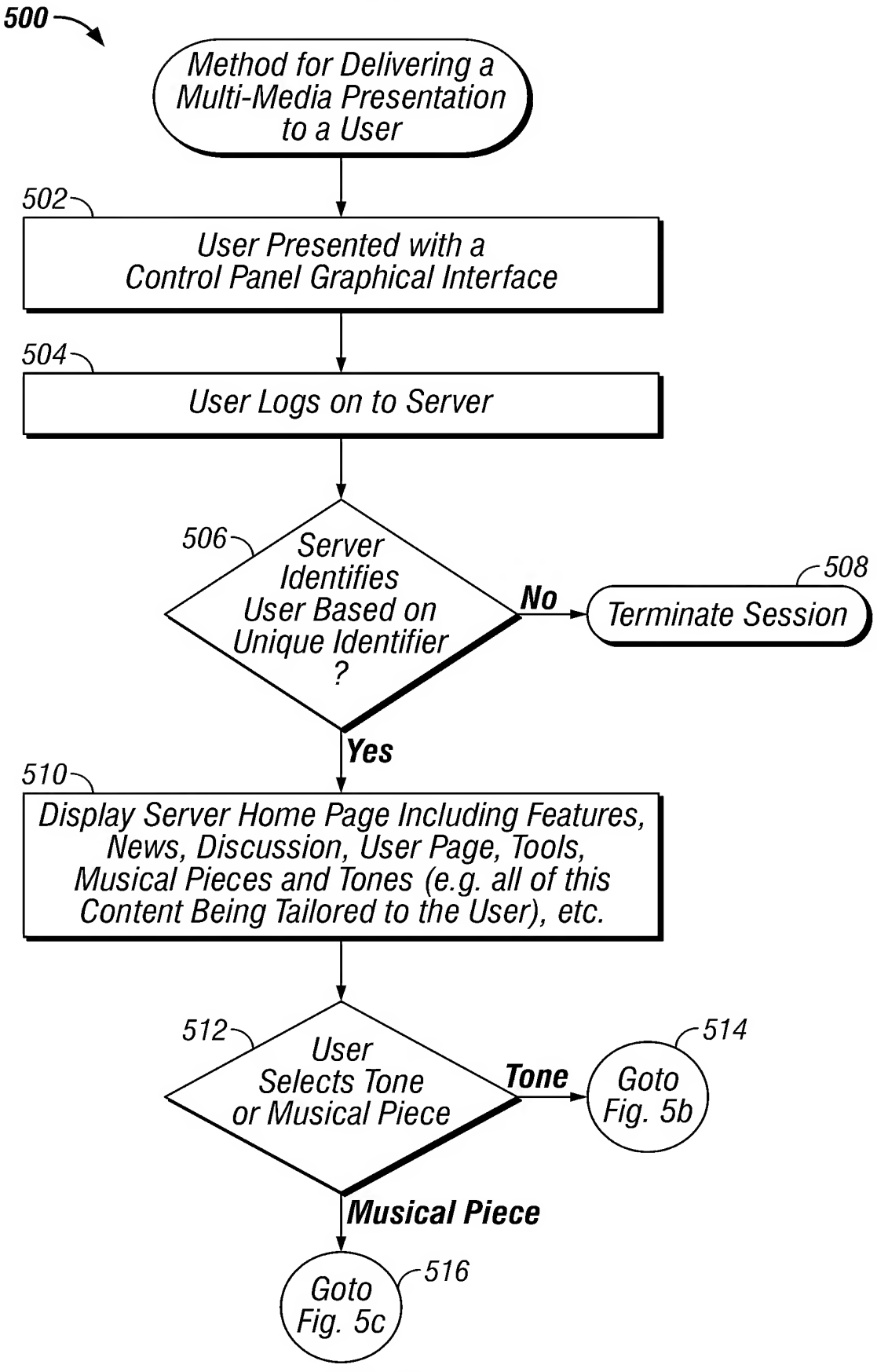

500
Method for Delivering a Multi-Media Presentation to a User
502
User Presented with a Control Panel Graphical Interface
504
User Logs on to Server
506
Server Identifies User Based on Unique Identifier ?
No
508
Terminate Session
Yes
510
Display Server Home Page Including Features, News, Discussion, User Page, Tools, Musical Pieces and Tones (e.g. all of this Content Being Tailored to the User), etc.
512
User Selects Tone or Musical Piece
Tone
514
Goto Fig. 5b
Musical Piece
516
Goto Fig. 5c

FIG. 5a

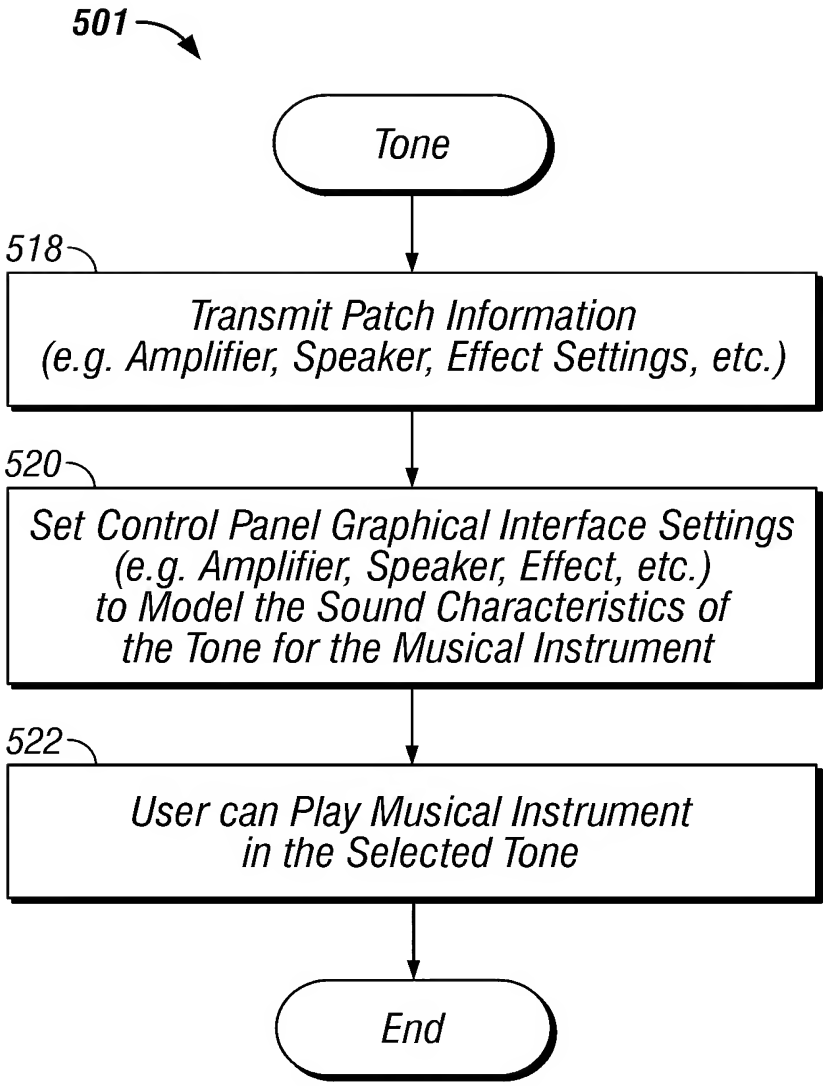

501
Tone
518
Transmit Patch Information
(e.g. Amplifier, Speaker, Effect Settings, etc.)
520
Set Control Panel Graphical Interface Settings
(e.g. Amplifier, Speaker, Effect, etc.)
to Model the Sound Characteristics of
the Tone for the Musical Instrument
522
User can Play Musical Instrument
in the Selected Tone
End

FIG. 5b

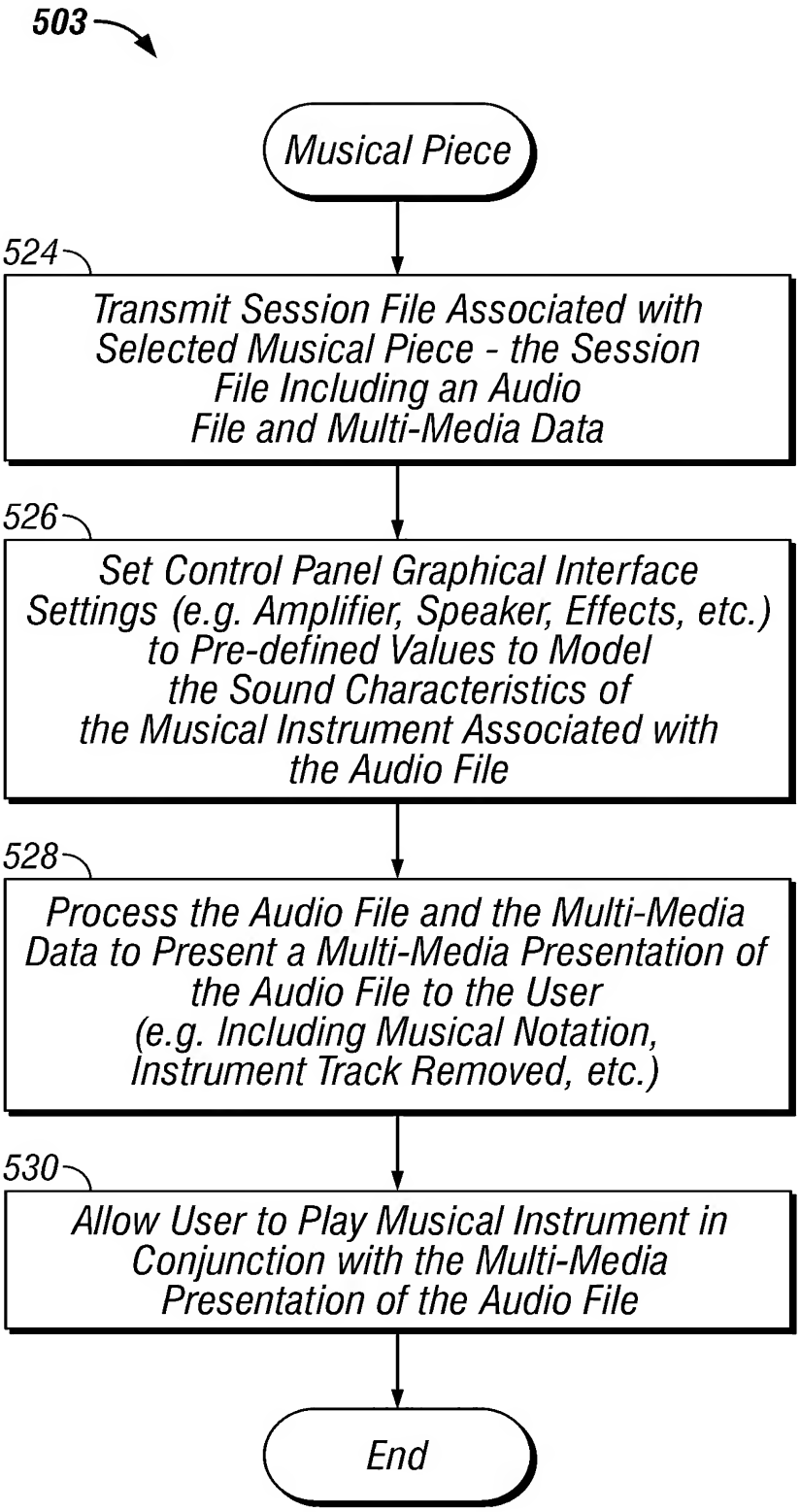

503
Musical Piece
524
Transmit Session File Associated with Selected Musical Piece - the Session File Including an Audio File and Multi-Media Data
526
Set Control Panel Graphical Interface Settings (e.g. Amplifier, Speaker, Effects, etc.) to Pre-defined Values to Model the Sound Characteristics of the Musical Instrument Associated with the Audio File
528
Process the Audio File and the Multi-Media Data to Present a Multi-Media Presentation of the Audio File to the User (e.g. Including Musical Notation, Instrument Track Removed, etc.)
530
Allow User to Play Musical Instrument in Conjunction with the Multi-Media Presentation of the Audio File
End

FIG. 5c

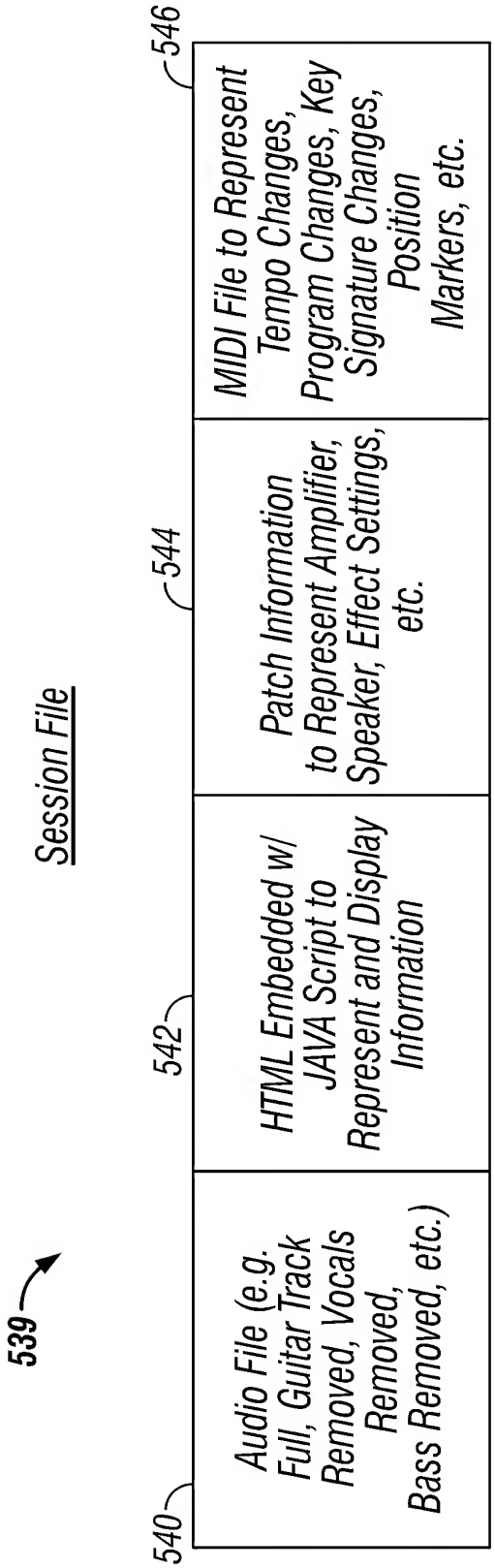

539
Session File
540
Audio File (e.g. Full, Guitar Track Removed, Vocals Removed, Bass Removed, etc.)
542
HTML Embedded w/ JAVA Script to Represent and Display Information
544
Patch Information to Represent Amplifier, Speaker, Effect Settings, etc.
546
MIDI File to Represent Tempo Changes, Program Changes, Key Signature Changes, Position Markers, etc.

FIG. 5d

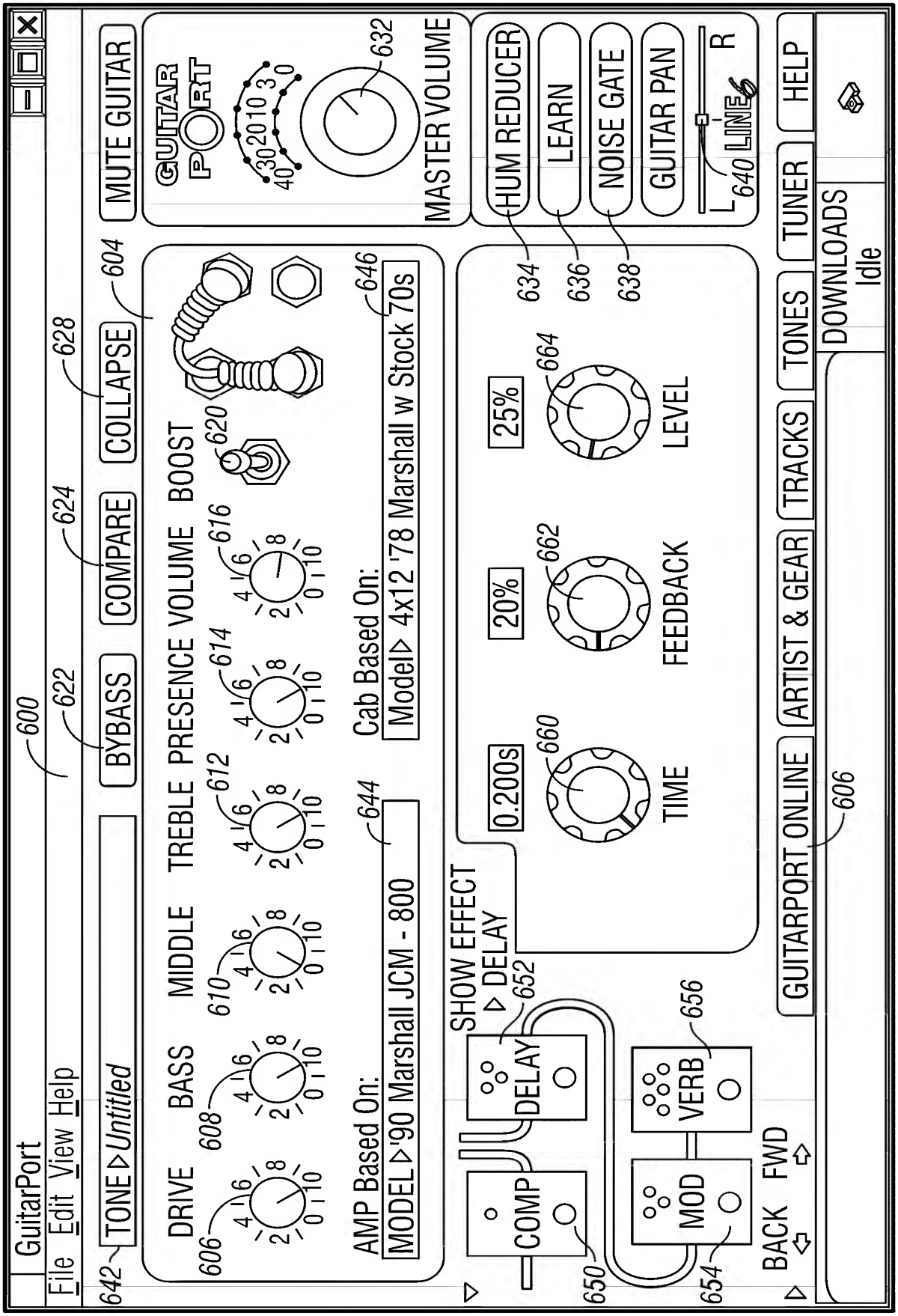

GuitarPort
File Edit View Help
600
622
628
624
642
TONE ▷ Untitled
BYBASS
COMPARE
COLLAPSE
604
MUTE GUITAR
GUITAR PORT
632
MASTER VOLUME
DRIVE
BASS
MIDDLE
TREBLE
PRESENCE
VOLUME
BOOST
606
608
610
612
614
616
620
AMP Based On:
MODEL ▷ '90 Marshall JCM - 800
644
Cab Based On:
Model ▷ 4x12 '78 Marshall w Stock 70s
646
HUM REDUCER
LEARN
NOISE GATE
GUITAR PAN
634
636
638
L
R
640
LINE 6
SHOW EFFECT
▷ DELAY
652
0.200s
660
TIME
20%
662
FEEDBACK
25%
664
LEVEL
COMP
DELAY
650
MOD
VERB
654
656
BACK
FWD
GUITARPORT ONLINE
ARTIST & GEAR
TRACKS
TONES
TUNER
HELP
606
DOWNLOADS
Idle

FIG. 6a

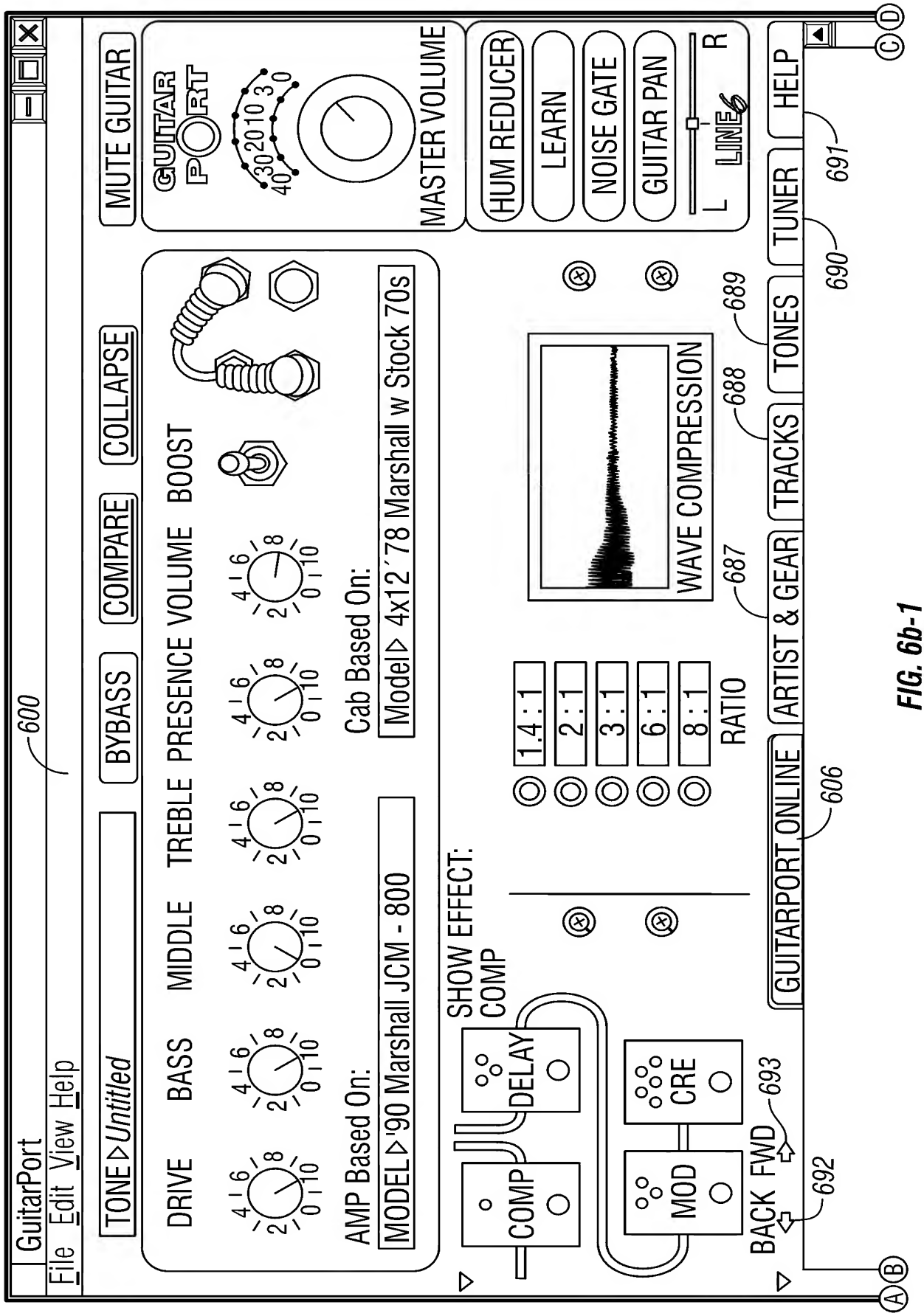

GuitarPort
600
File Edit View Help
TONE▷Untitled
BYBASS
COMPARE
COLLAPSE
MUTE GUITAR
GUITAR PORT
MASTER VOLUME
HUM REDUCER
LEARN
NOISE GATE
GUITAR PAN
L LINE6 R
DRIVE BASS MIDDLE TREBLE PRESENCE VOLUME BOOST
AMP Based On:
MODEL▷'90 Marshall JCM - 800
Cab Based On:
Model▷ 4x12′78 Marshall w Stock 70s
SHOW EFFECT:
COMP
DELAY
MOD
CRE
1.4:1
2:1
3:1
6:1
8:1
RATIO
687
WAVE COMPRESSION
688
TRACKS
689
TONES
690
TUNER
691
HELP
ARTIST & GEAR
GUITARPORT ONLINE
606
BACK FWD
693
692
A
B
C
D

FIG. 6b-1

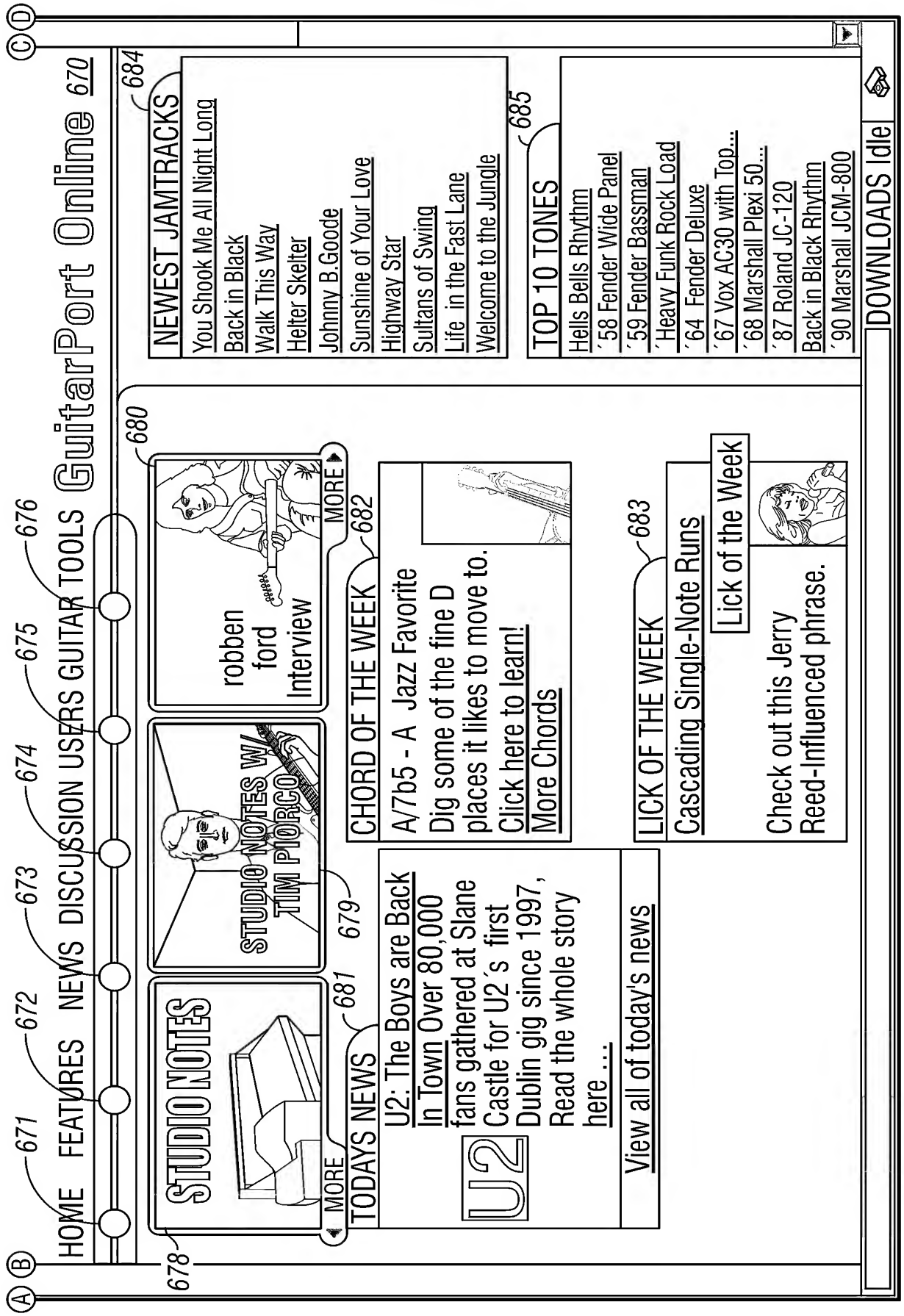

A
B
C
D
HOME
FEATURES
NEWS
DISCUSSION
USERS
GUITAR TOOLS
GuitarPort Online
670
671
672
673
674
675
676
678
680
684
NEWEST JAMTRACKS
You Shook Me All Night Long
Back in Black
Walk This Way
Helter Skelter
Johnny B.Goode
Sunshine of Your Love
Highway Star
Sultans of Swing
Life in the Fast Lane
Welcome to the Jungle
685
TOP 10 TONES
Hells Bells Rhythm
´58 Fender Wide Panel
´59 Fender Bassman
´Heavy Funk Rock Load
´64 Fender Deluxe
´67 Vox AC30 with Top...
´68 Marshall Plexi 50...
´87 Roland JC-120
Back in Black Rhythm
´90 Marshall JCM-800
robben ford Interview
MORE
STUDIO NOTES W/ TIM PIORCO
679
STUDIO NOTES
MORE
681
TODAYS NEWS
U2: The Boys are Back In Town Over 80,000 fans gathered at Slane Castle for U2´s first Dublin gig since 1997, Read the whole story here ....
U2
View all of today's news
CHORD OF THE WEEK
682
A/7b5 - A Jazz Favorite
Dig some of the fine D places it likes to move to.
Click here to learn!
More Chords
LICK OF THE WEEK
683
Cascading Single-Note Runs
Lick of the Week
Check out this Jerry Reed-Influenced phrase.
DOWNLOADS Idle

FIG. 6b-2

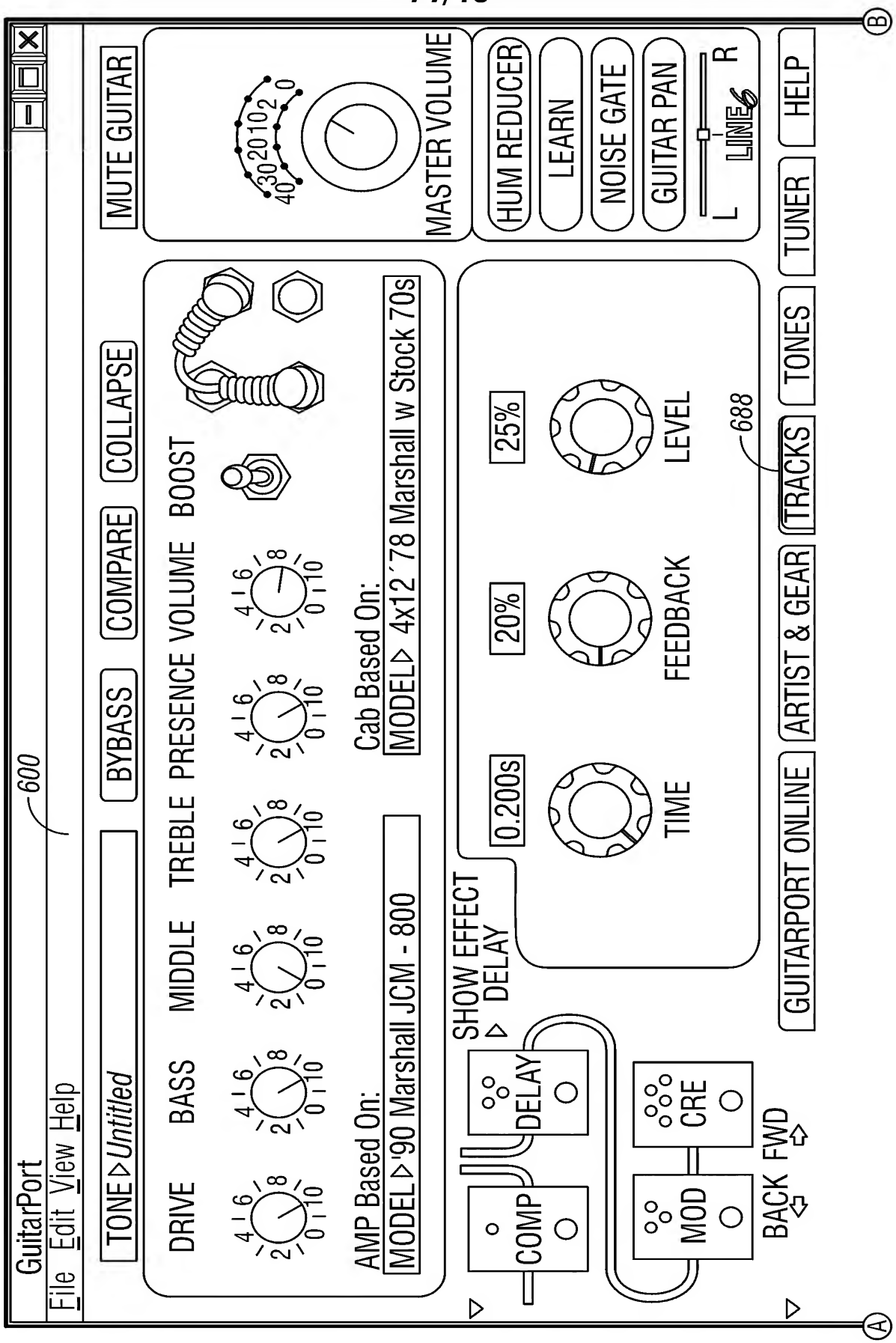

GuitarPort
600
File Edit View Help
TONE▷Untitled
BYBASS
COMPARE
COLLAPSE
MUTE GUITAR
DRIVE
BASS
MIDDLE
TREBLE
PRESENCE
VOLUME
BOOST
AMP Based On:
MODEL▷'90 Marshall JCM - 800
Cab Based On:
MODEL▷ 4x12´78 Marshall w Stock 70s
MASTER VOLUME
HUM REDUCER
LEARN
NOISE GATE
GUITAR PAN
L LINE 6 R
SHOW EFFECT
▷ DELAY
0.200s
20%
25%
TIME
FEEDBACK
LEVEL
688
COMP
DELAY
MOD
CRE
BACK
FWD
GUITARPORT ONLINE
ARTIST & GEAR
TRACKS
TONES
TUNER
HELP
A
B

FIG. 6c-1

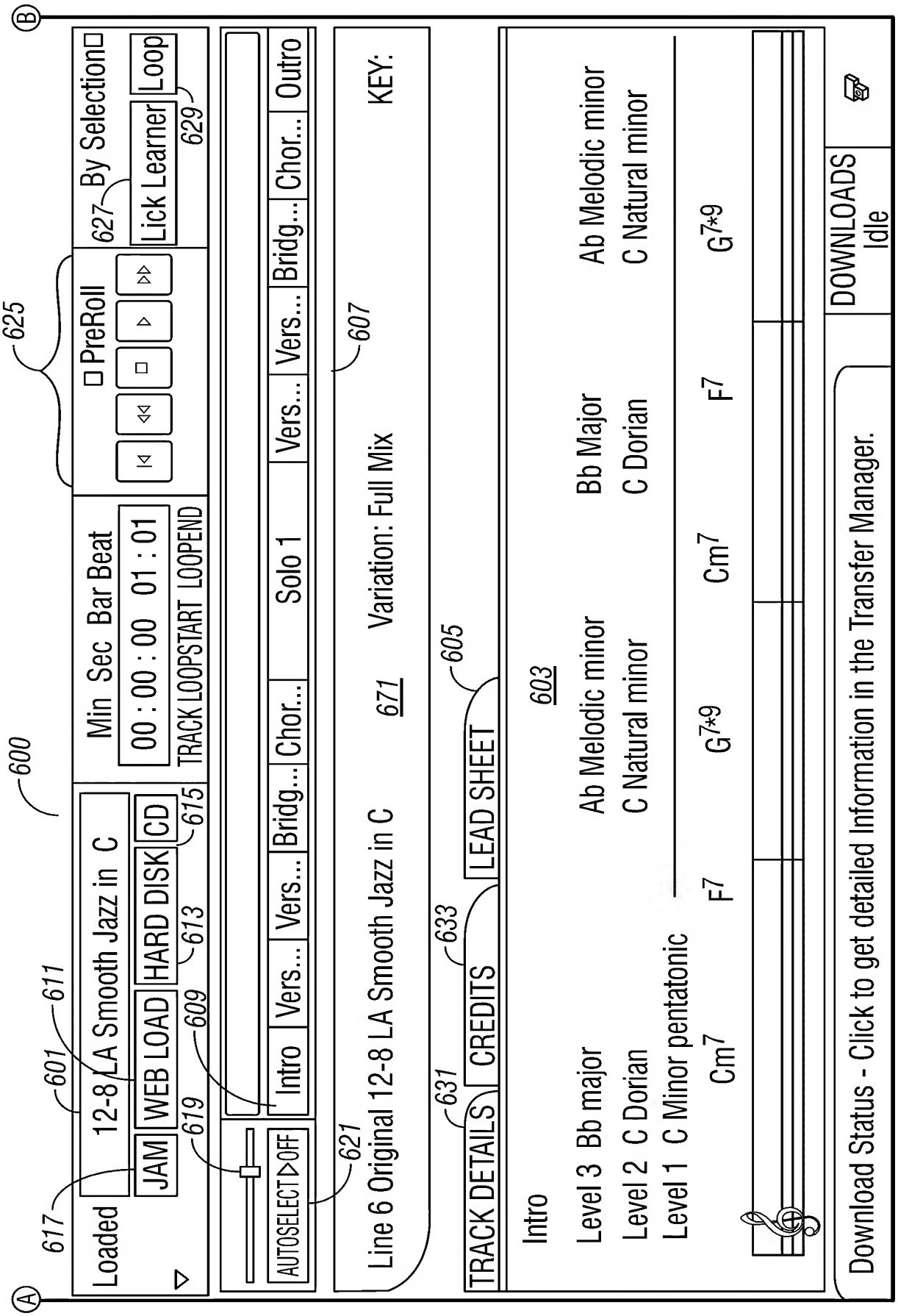

A
B
600
617
601
611
625
Loaded
12-8 LA Smooth Jazz in C
JAM
WEB LOAD
HARD DISK
CD
615
619
609
613
Min Sec Bar Beat
00 : 00 : 00 01 : 01
TRACK LOOPSTART LOOPEND
PreRoll
627
By Selection
Lick Learner
Loop
629
AUTOSELECT OFF
Intro
Vers...
Vers...
Bridg...
Chor...
Solo 1
Vers...
Vers...
Bridg...
Chor...
Outro
621
Line 6 Original 12-8 LA Smooth Jazz in C
671
Variation: Full Mix
607
KEY:
631
633
605
TRACK DETAILS
CREDITS
LEAD SHEET
603
Intro
Level 3 Bb major
Level 2 C Dorian
Level 1 C Minor pentatonic
Ab Melodic minor
C Natural minor
Bb Major
C Dorian
Ab Melodic minor
C Natural minor
Cm7
F7
G7*9
Cm7
F7
G7*9
Download Status - Click to get detailed Information in the Transfer Manager.
DOWNLOADS
Idle

FIG. 6c-2

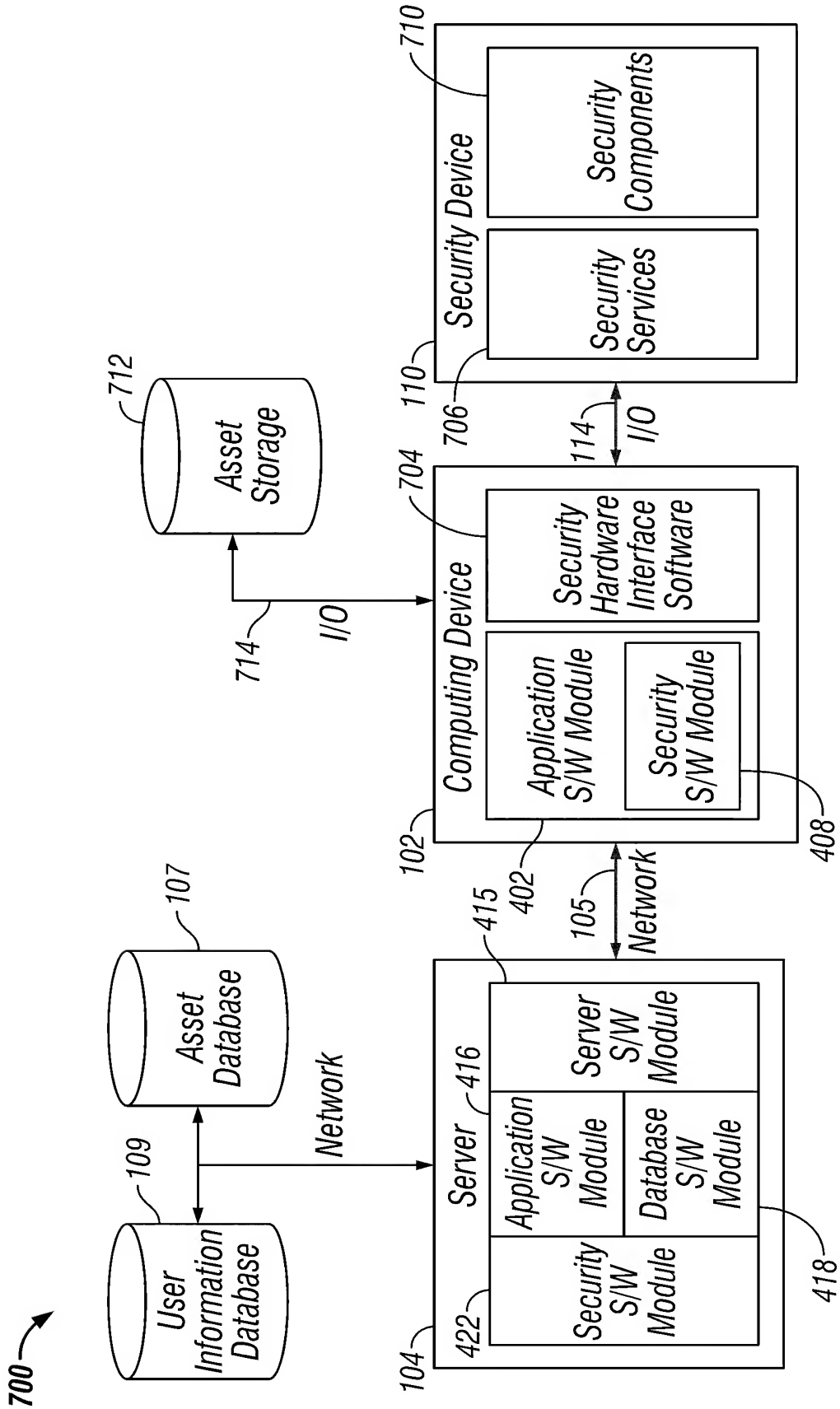

700
User Information Database
109
Asset Database
107
Network
Server
416
Application S/W Module
Database S/W Module
Server S/W Module
Security S/W Module
422
104
415
418
105
Network
Computing Device
102
Application S/W Module
Security S/W Module
408
402
Security Hardware Interface Software
704
114
I/O
Security Device
710
Security Components
Security Services
706
110
712
Asset Storage
714
I/O

FIG. 7a

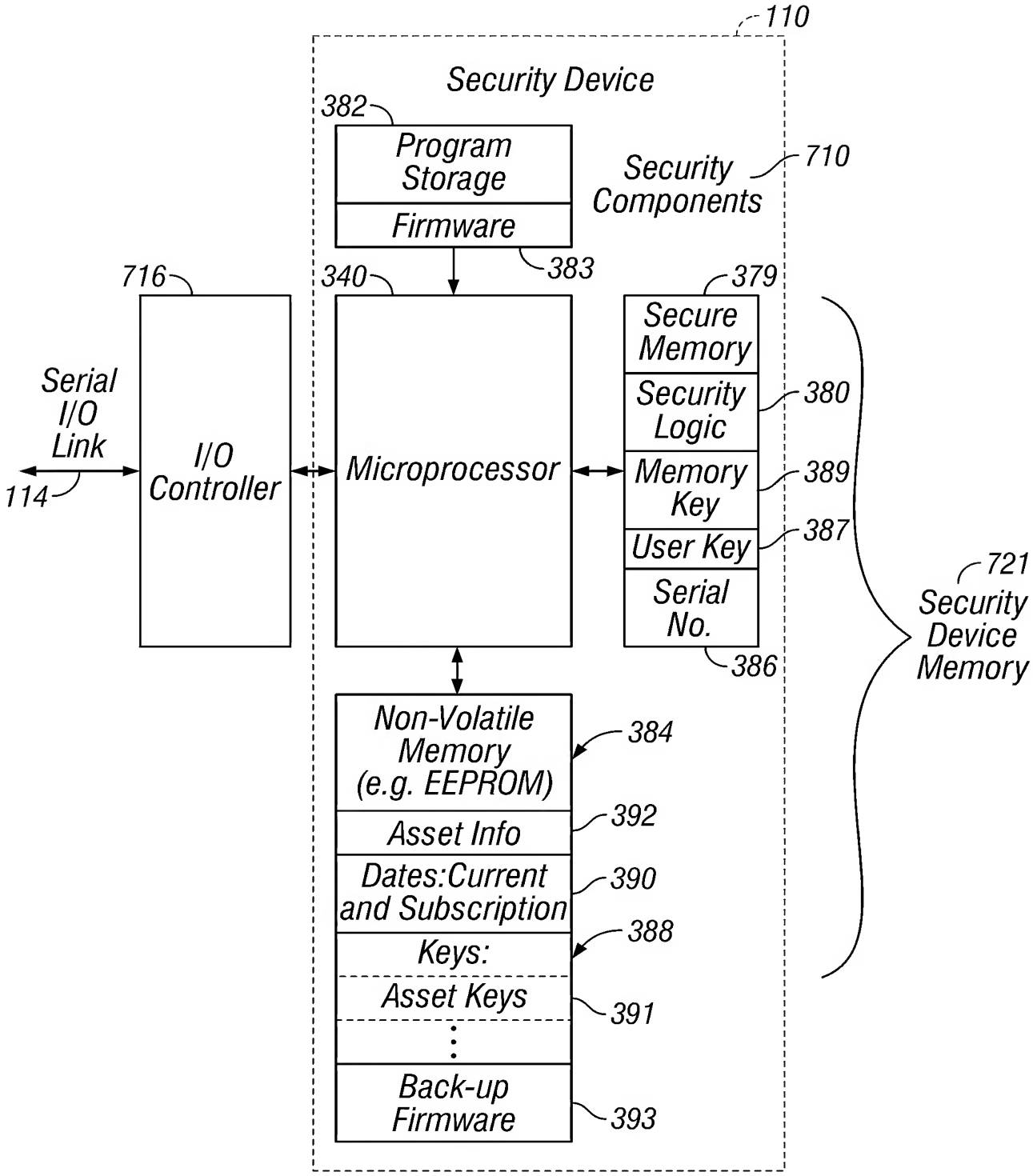

110
Security Device
382
Program Storage
Firmware
383
Security Components
710
716
340
379
Secure Memory
Security Logic
380
Memory Key
389
User Key
387
Serial No.
386
721
Security Device Memory
Serial I/O Link
114
I/O Controller
Microprocessor
Non-Volatile Memory (e.g. EEPROM)
384
Asset Info
392
Dates:Current and Subscription
390
Keys:
388
Asset Keys
391
Back-up Firmware
393

FIG. 7b

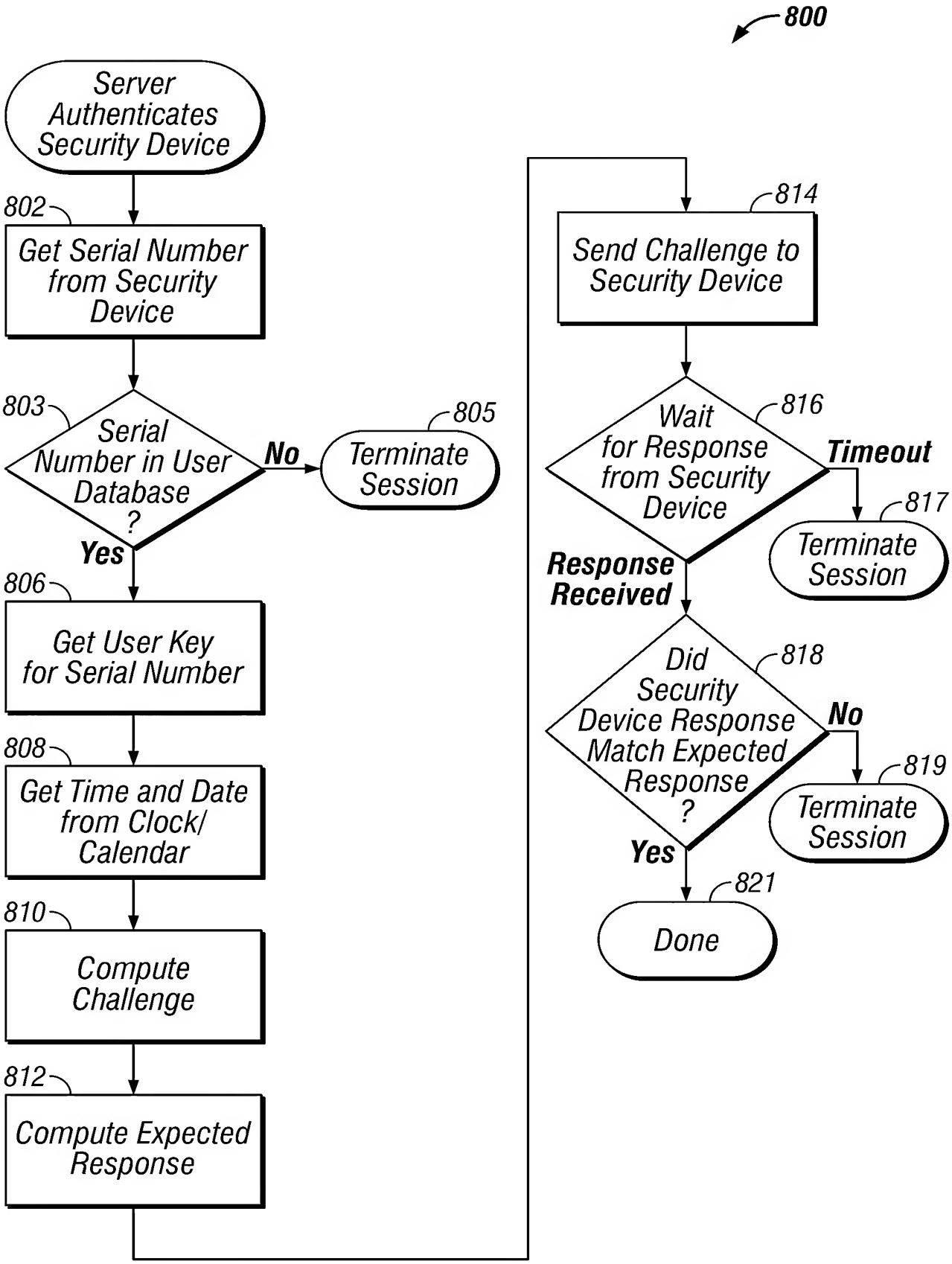

800
Server Authenticates Security Device
802
Get Serial Number from Security Device
803
Serial Number in User Database ?
No
805
Terminate Session
Yes
806
Get User Key for Serial Number
808
Get Time and Date from Clock/ Calendar
810
Compute Challenge
812
Compute Expected Response
814
Send Challenge to Security Device
816
Wait for Response from Security Device
Timeout
817
Terminate Session
Response Received
818
Did Security Device Response Match Expected Response ?
No
819
Terminate Session
Yes
821
Done

FIG. 8a

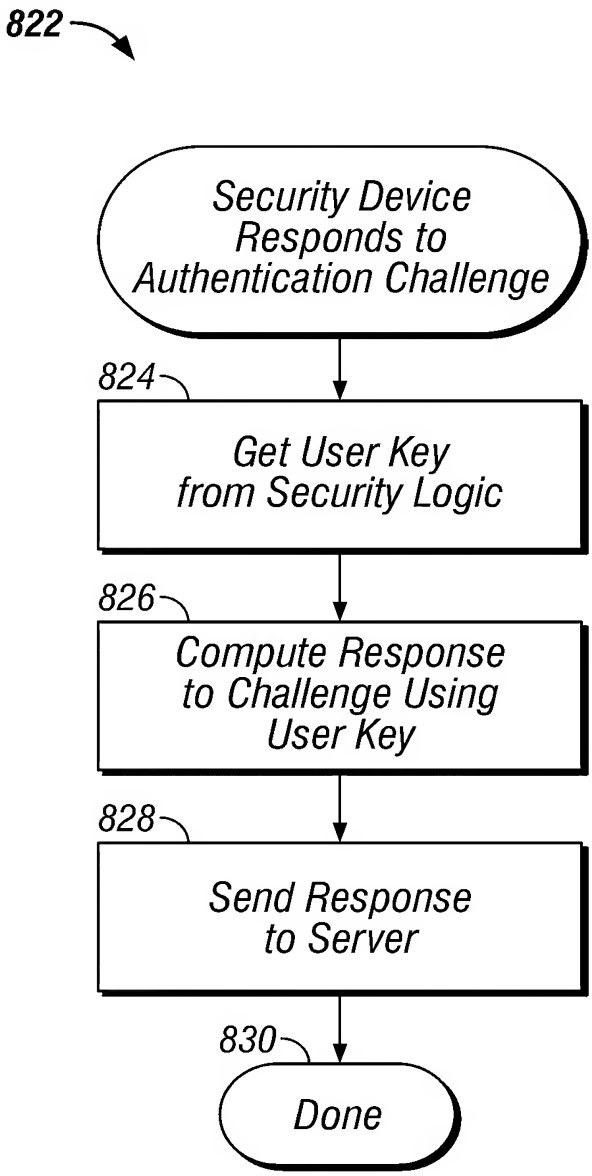

822
Security Device Responds to Authentication Challenge
824
Get User Key from Security Logic
826
Compute Response to Challenge Using User Key
828
Send Response to Server
830
Done

FIG. 8b

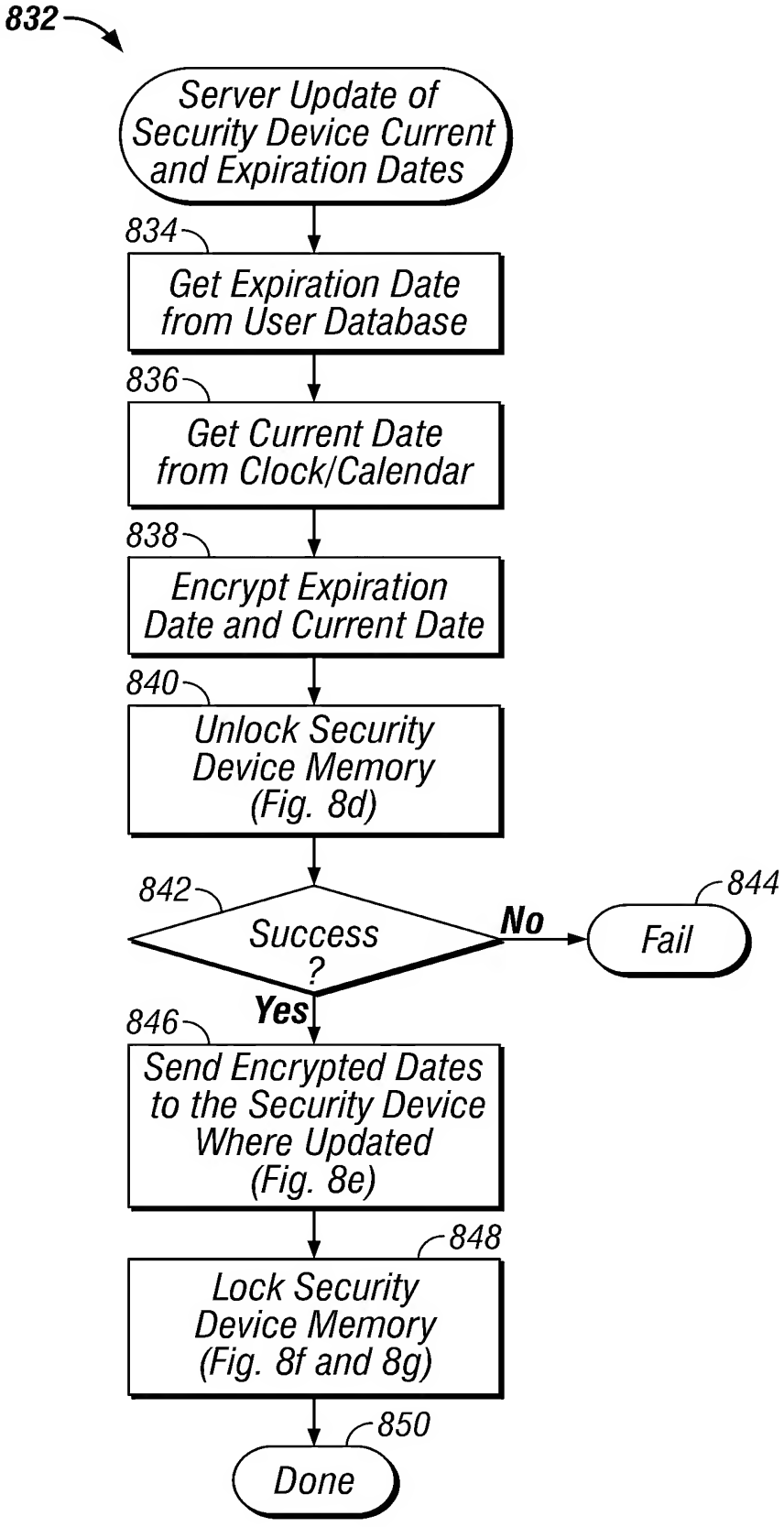

832
Server Update of Security Device Current and Expiration Dates
834
Get Expiration Date from User Database
836
Get Current Date from Clock/Calendar
838
Encrypt Expiration Date and Current Date
840
Unlock Security Device Memory (Fig. 8d)
842
Success ?
No
844
Fail
Yes
846
Send Encrypted Dates to the Security Device Where Updated (Fig. 8e)
848
Lock Security Device Memory (Fig. 8f and 8g)
850
Done

FIG. 8c

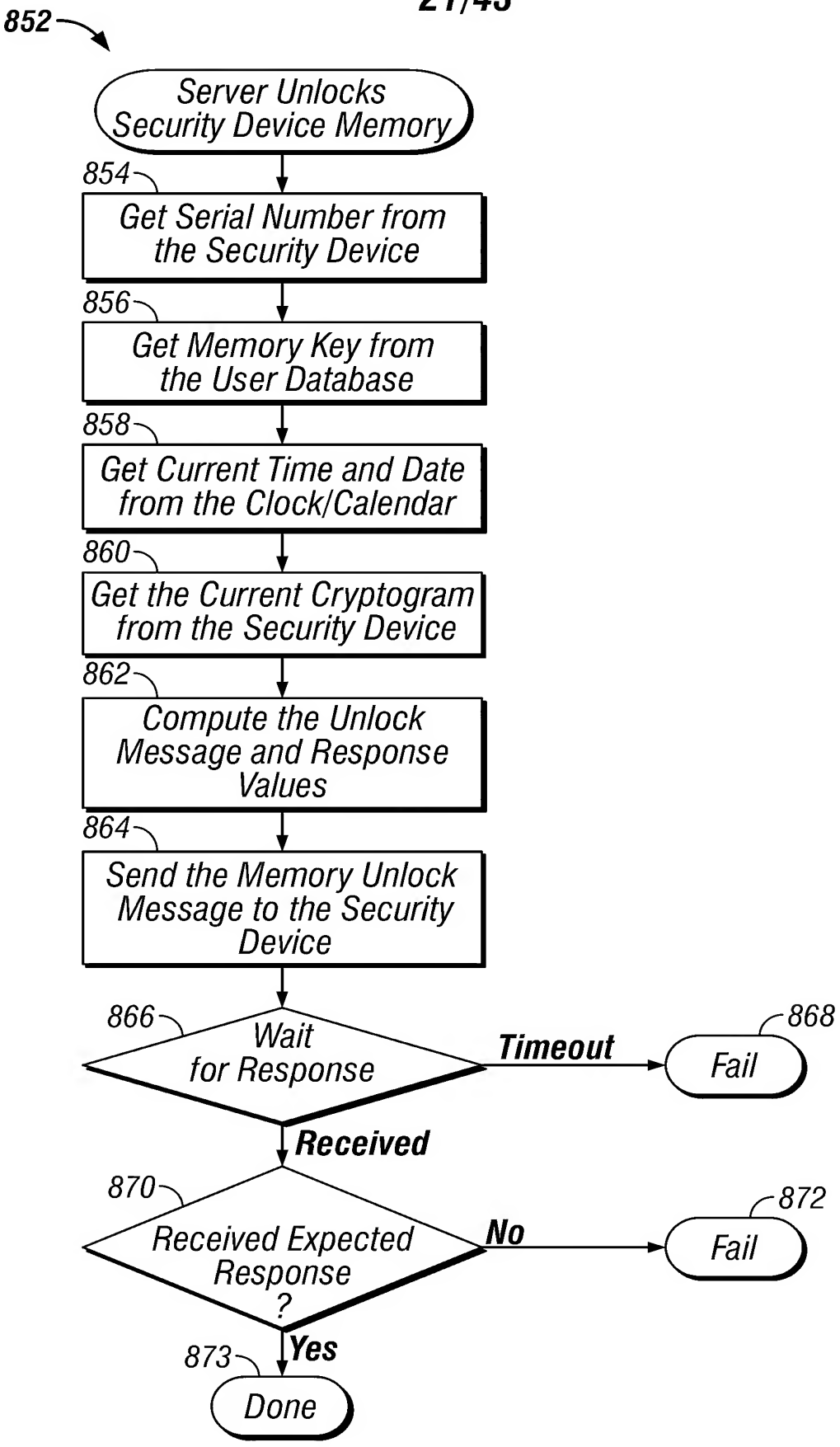

852
Server Unlocks Security Device Memory
854
Get Serial Number from the Security Device
856
Get Memory Key from the User Database
858
Get Current Time and Date from the Clock/Calendar
860
Get the Current Cryptogram from the Security Device
862
Compute the Unlock Message and Response Values
864
Send the Memory Unlock Message to the Security Device
866
Wait for Response
Timeout
868
Fail
Received
870
Received Expected Response ?
No
872
Fail
Yes
873
Done

FIG. 8d

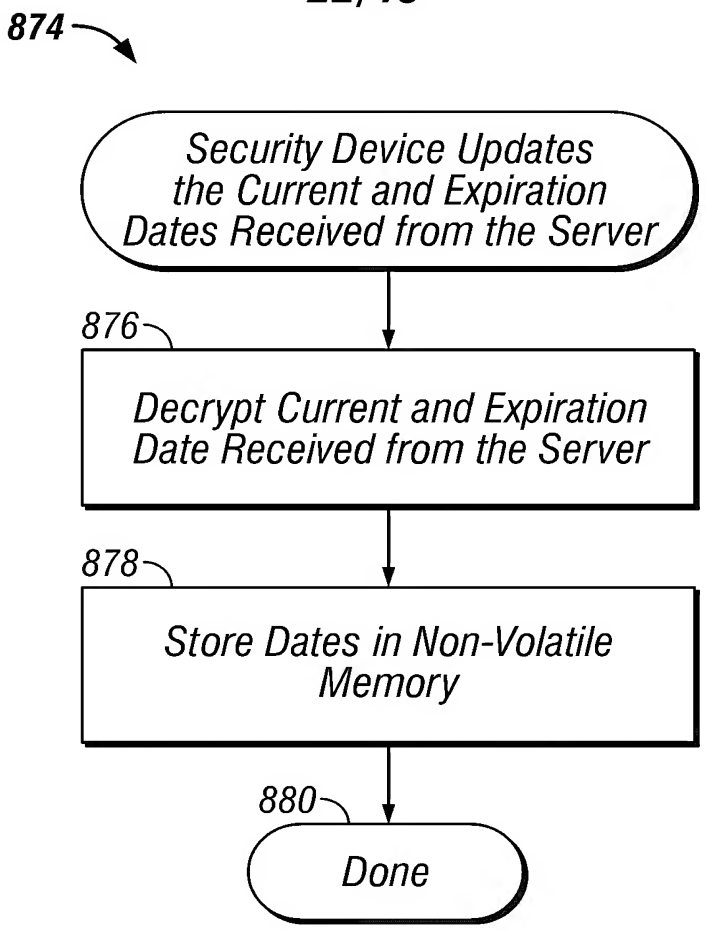

874
Security Device Updates the Current and Expiration Dates Received from the Server
876
Decrypt Current and Expiration Date Received from the Server
878
Store Dates in Non-Volatile Memory
880
Done

FIG. 8e

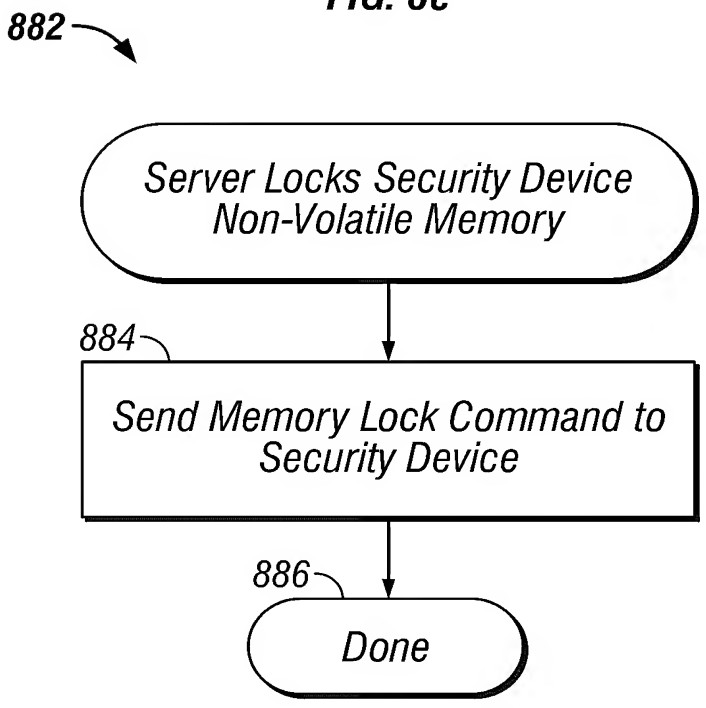

882
Server Locks Security Device Non-Volatile Memory
884
Send Memory Lock Command to Security Device
886
Done

FIG. 8f

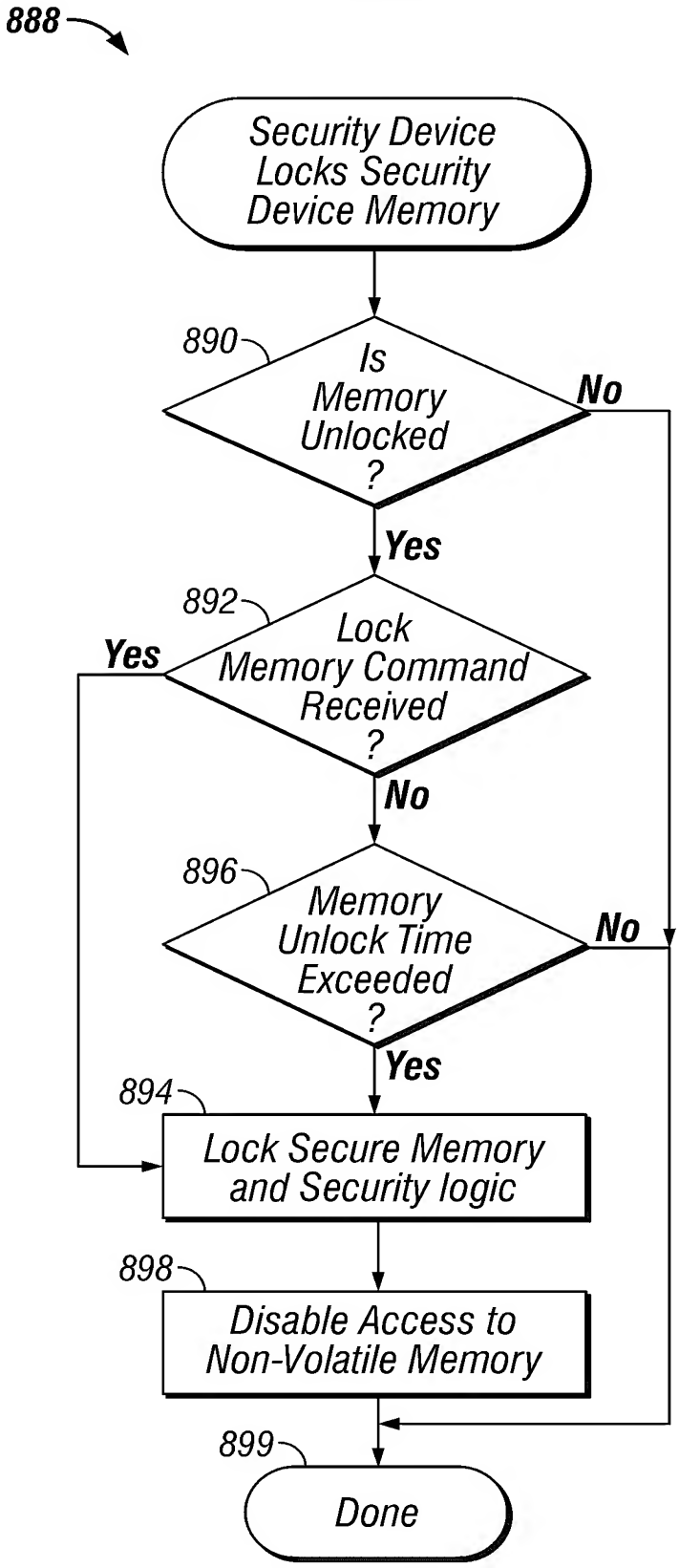

888
Security Device Locks Security Device Memory
890
Is Memory Unlocked ?
No
Yes
892
Lock Memory Command Received ?
Yes
No
896
Memory Unlock Time Exceeded ?
No
Yes
894
Lock Secure Memory and Security logic
898
Disable Access to Non-Volatile Memory
899
Done

FIG. 8g

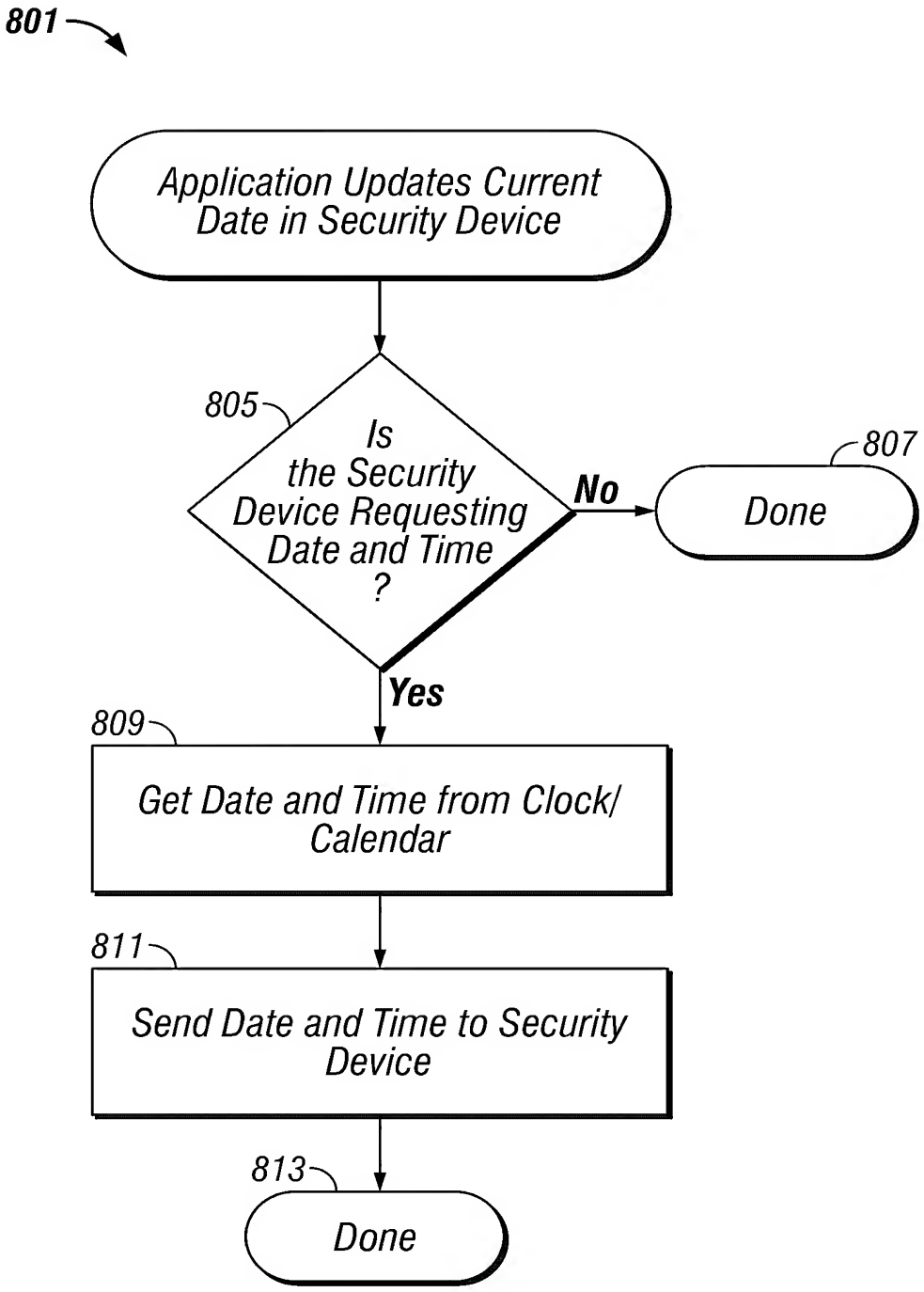

801
Application Updates Current Date in Security Device
805
Is the Security Device Requesting Date and Time ?
No
807
Done
Yes
809
Get Date and Time from Clock/ Calendar
811
Send Date and Time to Security Device
813
Done

FIG. 8h

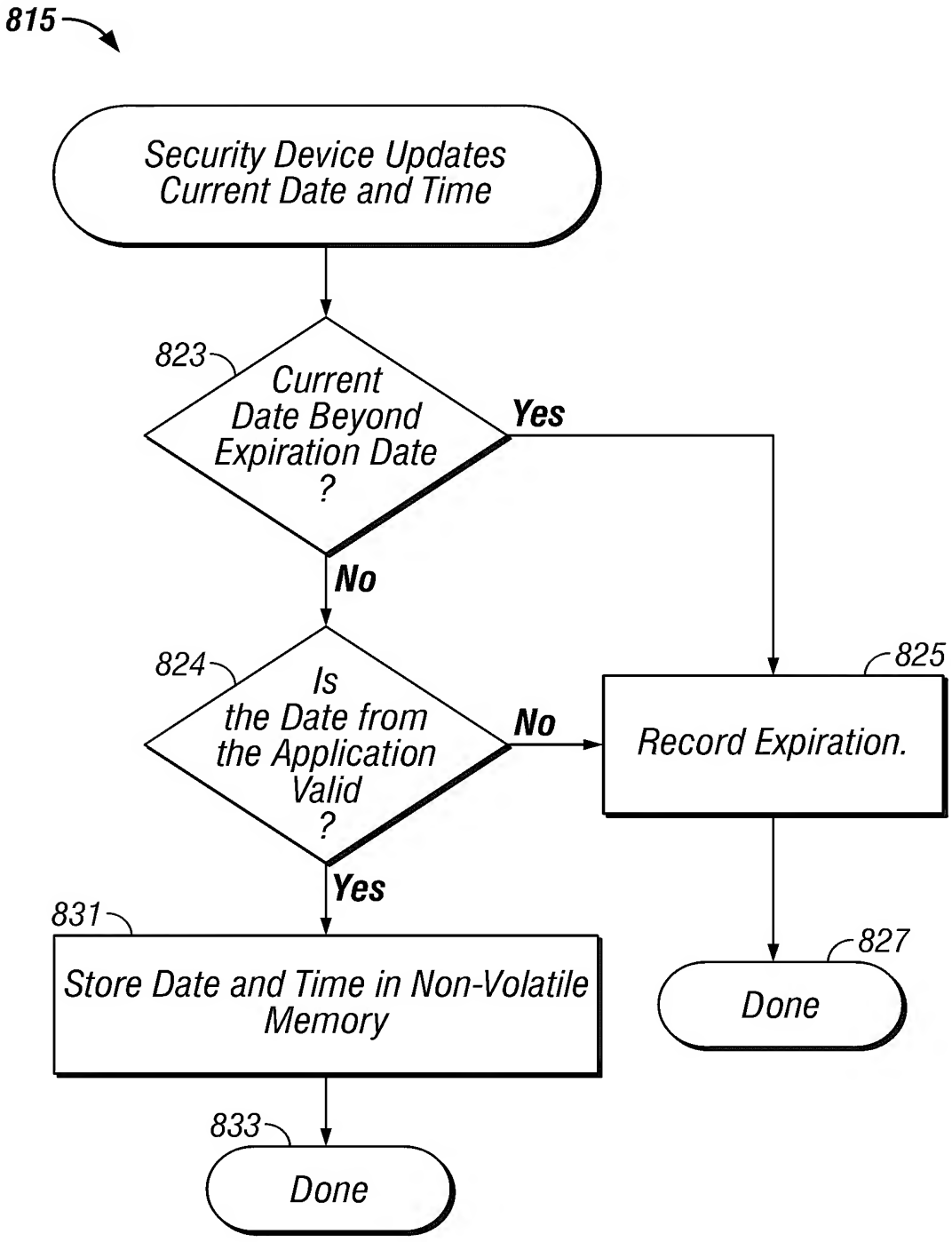

815
Security Device Updates Current Date and Time
823
Current Date Beyond Expiration Date ?
Yes
No
824
Is the Date from the Application Valid ?
No
825
Record Expiration.
Yes
831
Store Date and Time in Non-Volatile Memory
827
Done
833
Done

FIG. 8i

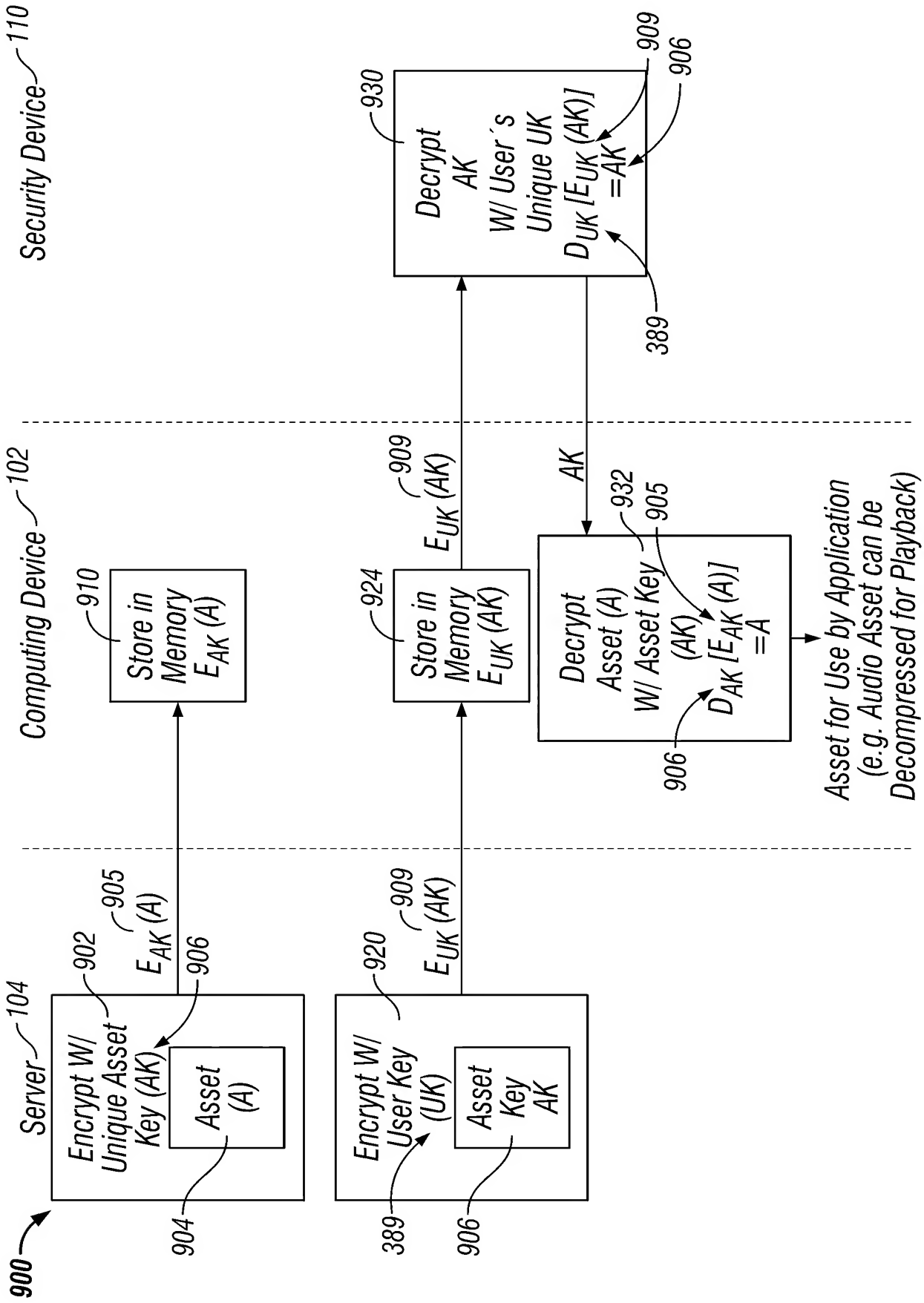

900
Server
104
Encrypt W/ Unique Asset Key (AK)
Asset (A)
902
904
E_{AK} (A)
905
906
Encrypt W/ User Key (UK)
Asset Key AK
920
389
906
E_{UK} (AK)
909
Computing Device
102
Store in Memory E_{AK} (A)
910
Store in Memory E_{UK} (AK)
924
E_{UK} (AK)
909
Decrypt Asset (A) W/ Asset Key (AK) D_{AK} [E_{AK} (A)] =A
932
905
906
AK
Security Device
110
Decrypt AK W/ User's Unique UK D_{UK} [E_{UK} (AK)] =AK
930
909
906
389
Asset for Use by Application (e.g. Audio Asset can be Decompressed for Playback)

FIG. 9

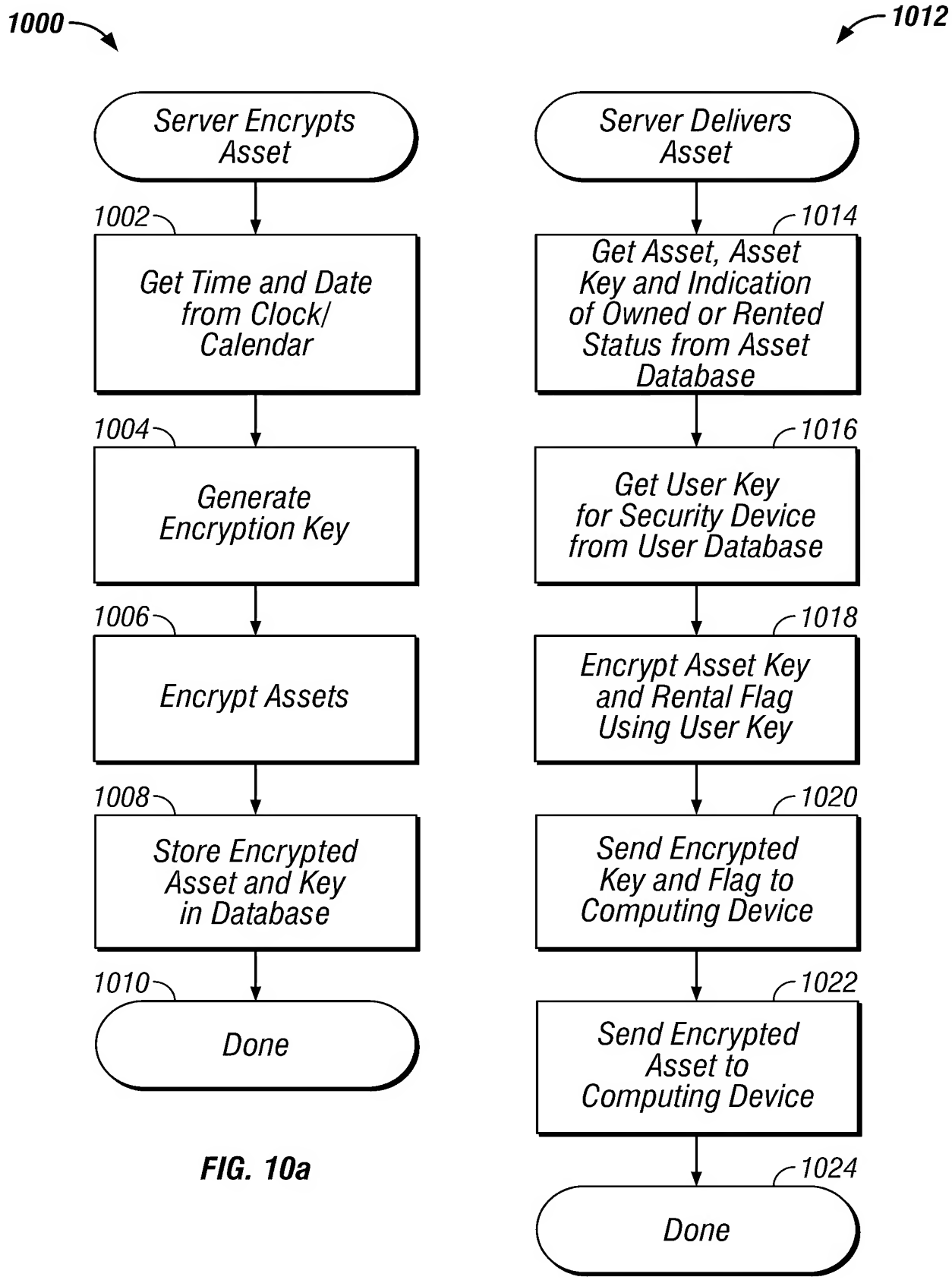


FIG. 10a

FIG. 10b

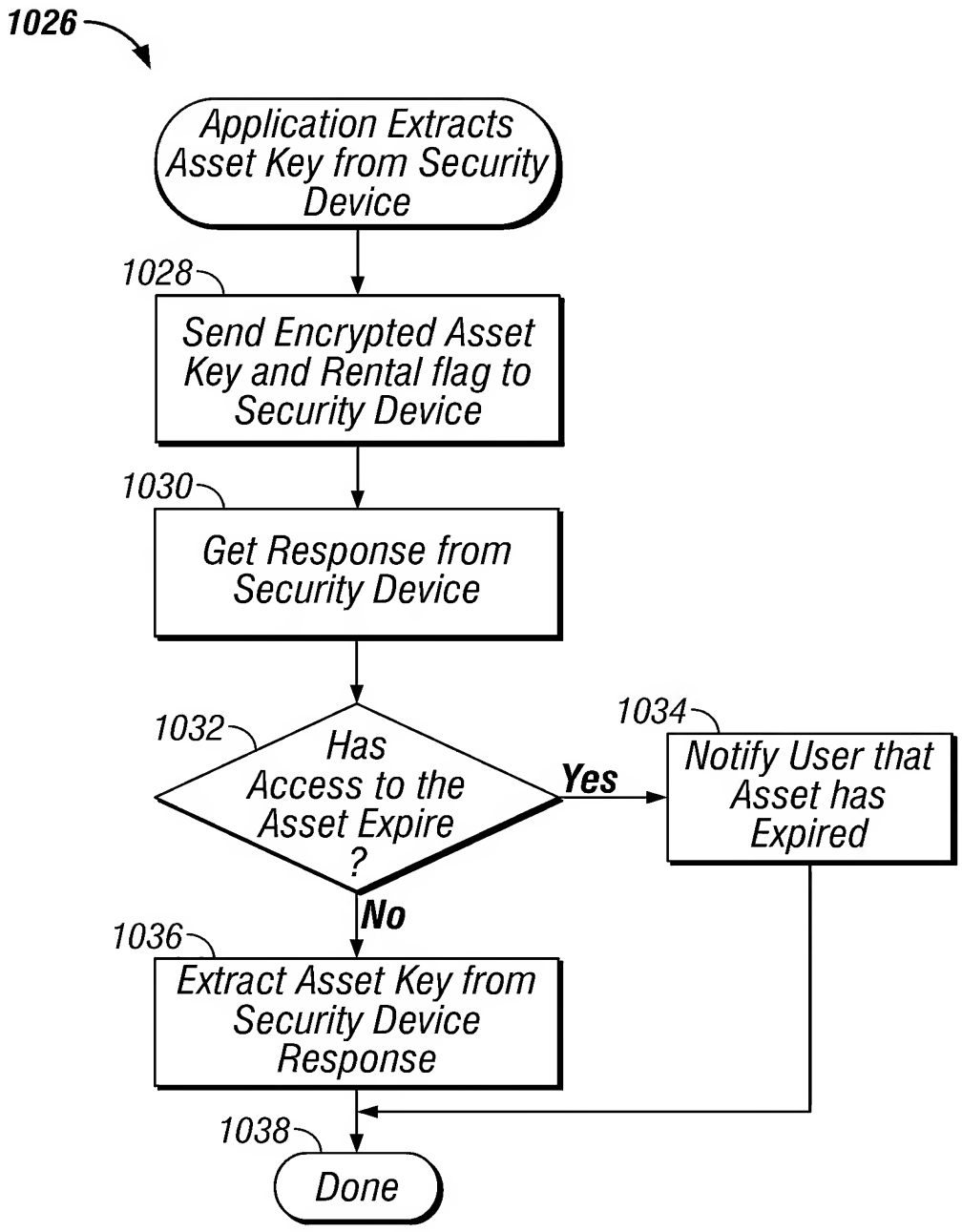

1026
Application Extracts Asset Key from Security Device
1028
Send Encrypted Asset Key and Rental flag to Security Device
1030
Get Response from Security Device
1032
Has Access to the Asset Expire ?
Yes
1034
Notify User that Asset has Expired
No
1036
Extract Asset Key from Security Device Response
1038
Done

FIG. 10c

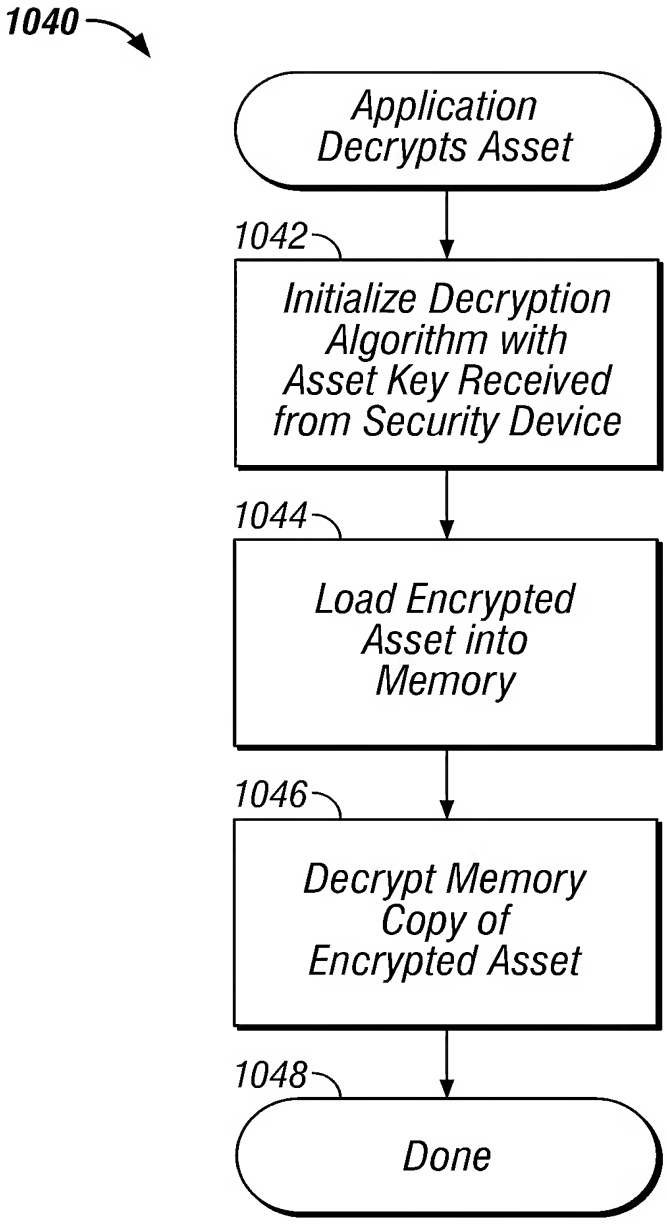

1040
Application Decrypts Asset
1042
Initialize Decryption Algorithm with Asset Key Received from Security Device
1044
Load Encrypted Asset into Memory
1046
Decrypt Memory Copy of Encrypted Asset
1048
Done

FIG. 10d

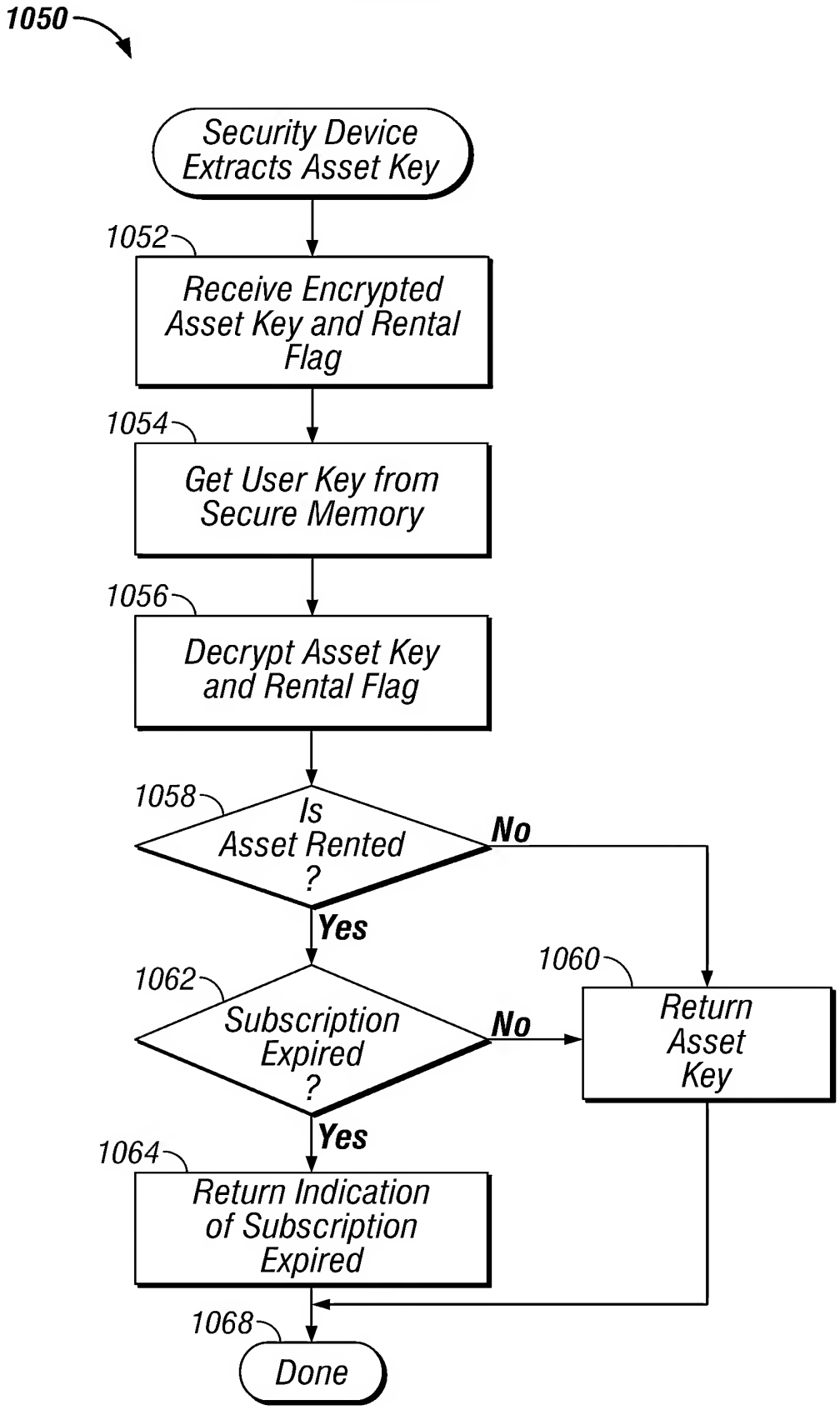

1050
Security Device Extracts Asset Key
1052
Receive Encrypted Asset Key and Rental Flag
1054
Get User Key from Secure Memory
1056
Decrypt Asset Key and Rental Flag
1058
Is Asset Rented ?
No
Yes
1060
1062
Subscription Expired ?
No
Return Asset Key
Yes
1064
Return Indication of Subscription Expired
1068
Done

FIG. 10e

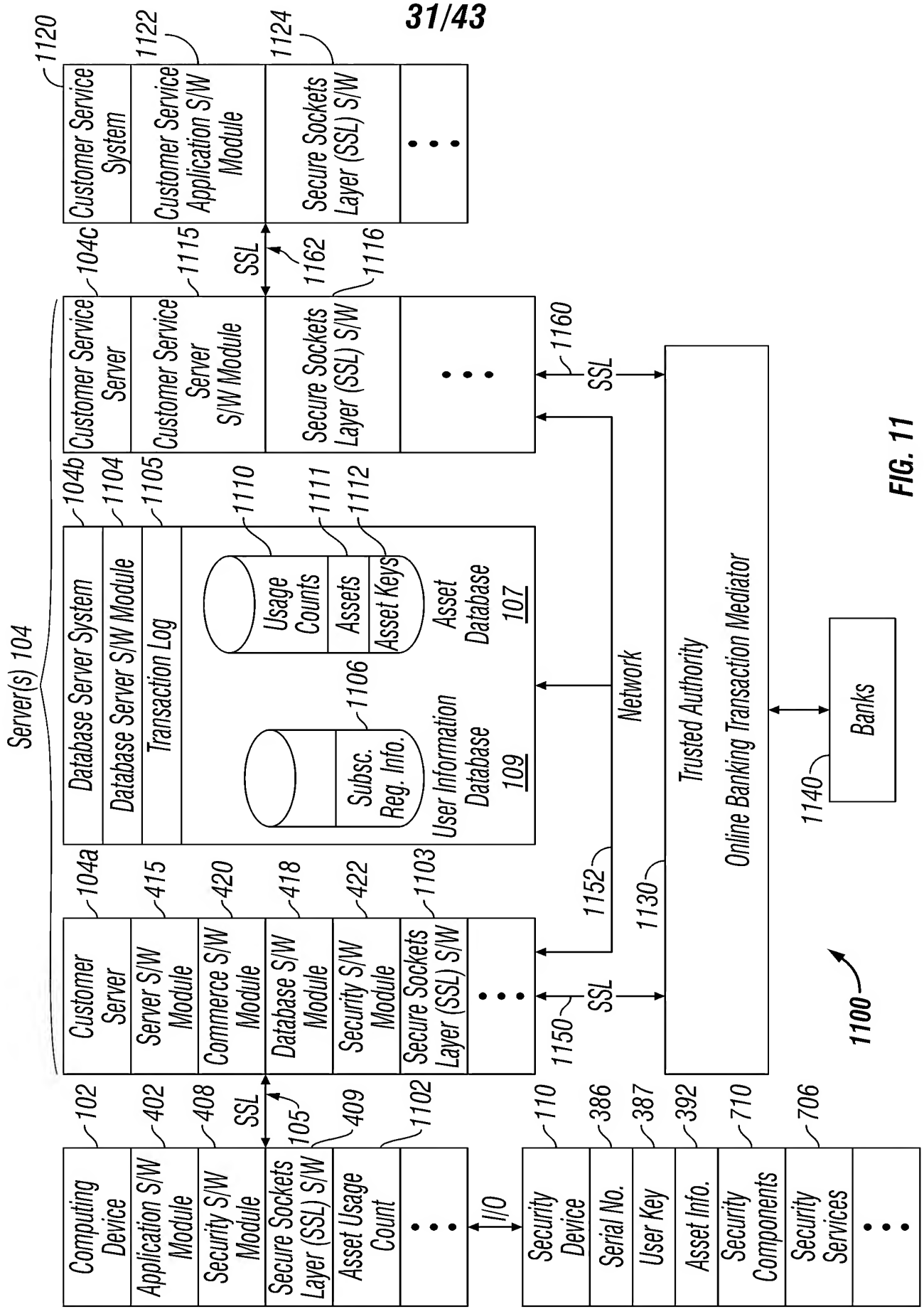

Server(s) 104
Computing Device
102
Application S/W Module
402
Security S/W Module
408
Secure Sockets Layer (SSL) S/W
105
Asset Usage Count
409
1102
I/O
Security Device
110
Serial No.
386
User Key
387
Asset Info.
392
Security Components
710
Security Services
706
SSL
Customer Server
104a
Server S/W Module
415
Commerce S/W Module
420
Database S/W Module
418
Security S/W Module
422
Secure Sockets Layer (SSL) S/W
1103
1150
Database Server System
104b
Database Server S/W Module
1104
Transaction Log
1105
Usage Counts
1110
Assets
1111
Asset Keys
1112
Asset Database 107
Subsc. Reg. Info.
1106
User Information Database 109
Customer Service Server
104c
Customer Service Server S/W Module
1115
Secure Sockets Layer (SSL) S/W
1116
1162
Customer Service System
1120
Customer Service Application S/W Module
1122
Secure Sockets Layer (SSL) S/W
1124
1160
1152
Network
1130
Trusted Authority
Online Banking Transaction Mediator
1140
Banks
1100

FIG. 11

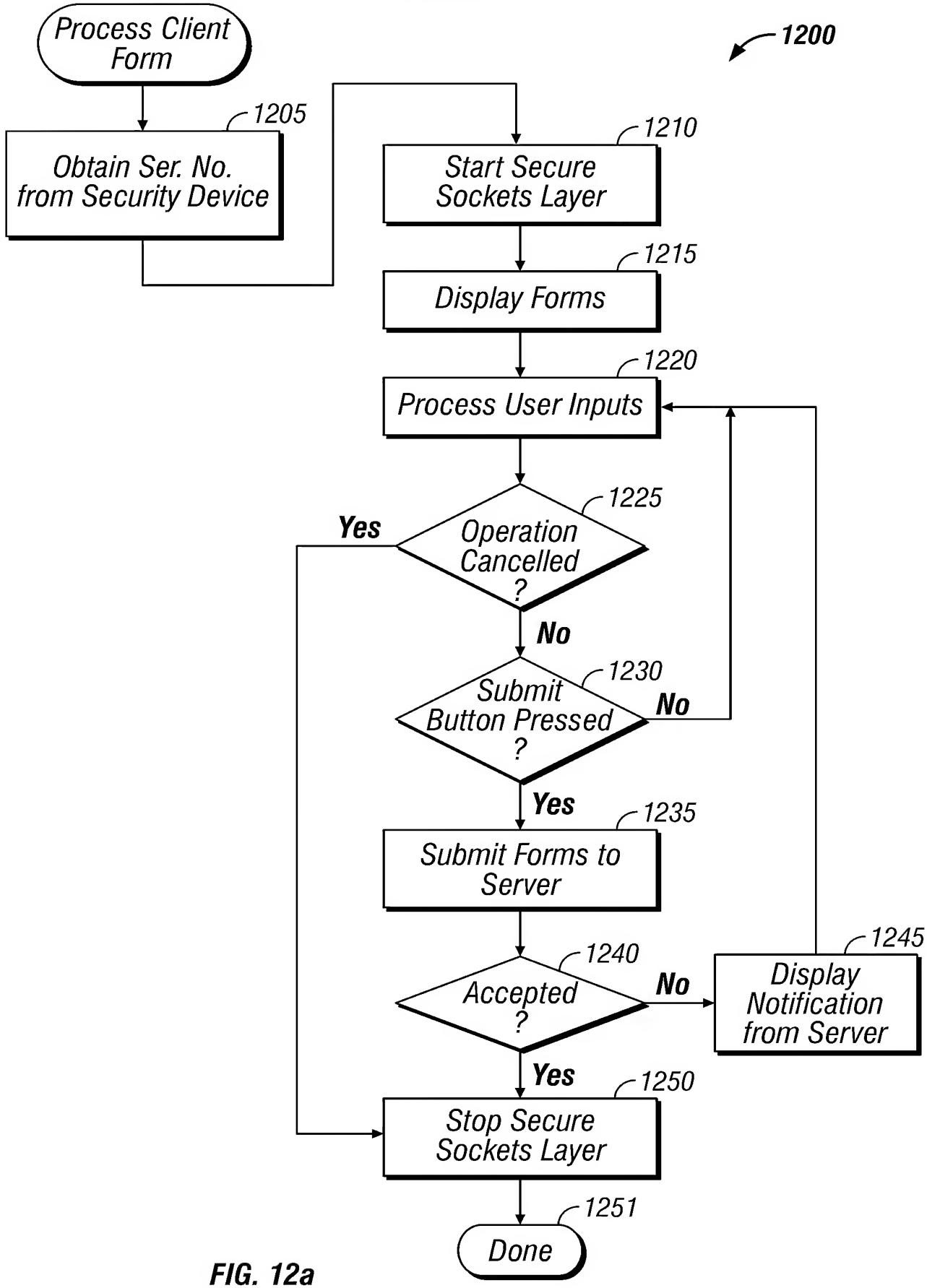

Process Client Form
1200
1205
Obtain Ser. No. from Security Device
1210
Start Secure Sockets Layer
1215
Display Forms
1220
Process User Inputs
1225
Operation Cancelled ?
Yes
No
1230
Submit Button Pressed ?
No
Yes
1235
Submit Forms to Server
1240
Accepted ?
No
1245
Display Notification from Server
Yes
1250
Stop Secure Sockets Layer
1251
Done

FIG. 12a

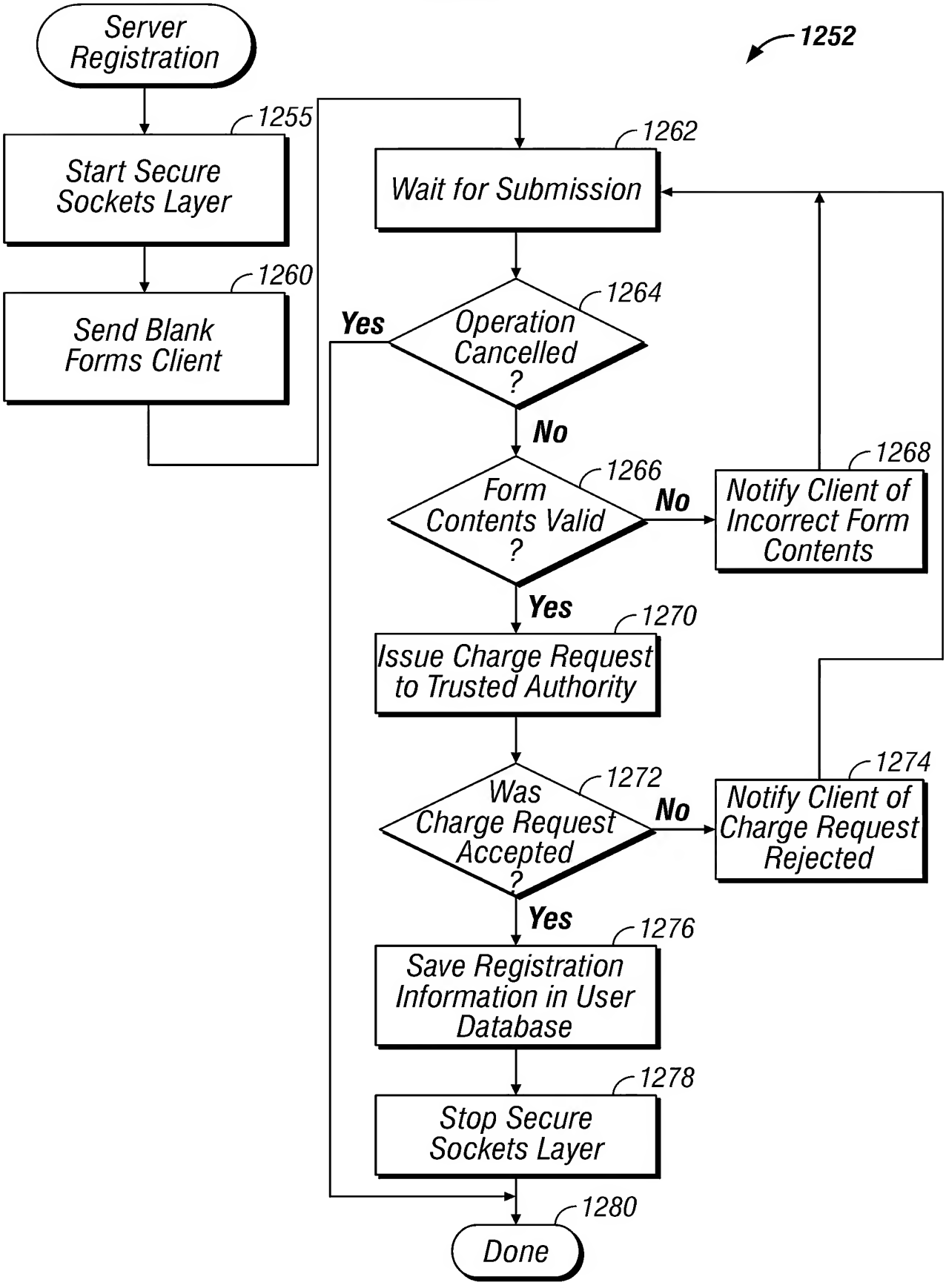

Server Registration
1252
1255
Start Secure Sockets Layer
1260
Send Blank Forms Client
1262
Wait for Submission
1264
Operation Cancelled ?
Yes
No
1266
Form Contents Valid ?
No
1268
Notify Client of Incorrect Form Contents
Yes
1270
Issue Charge Request to Trusted Authority
1272
Was Charge Request Accepted ?
No
1274
Notify Client of Charge Request Rejected
Yes
1276
Save Registration Information in User Database
1278
Stop Secure Sockets Layer
1280
Done

FIG. 12b

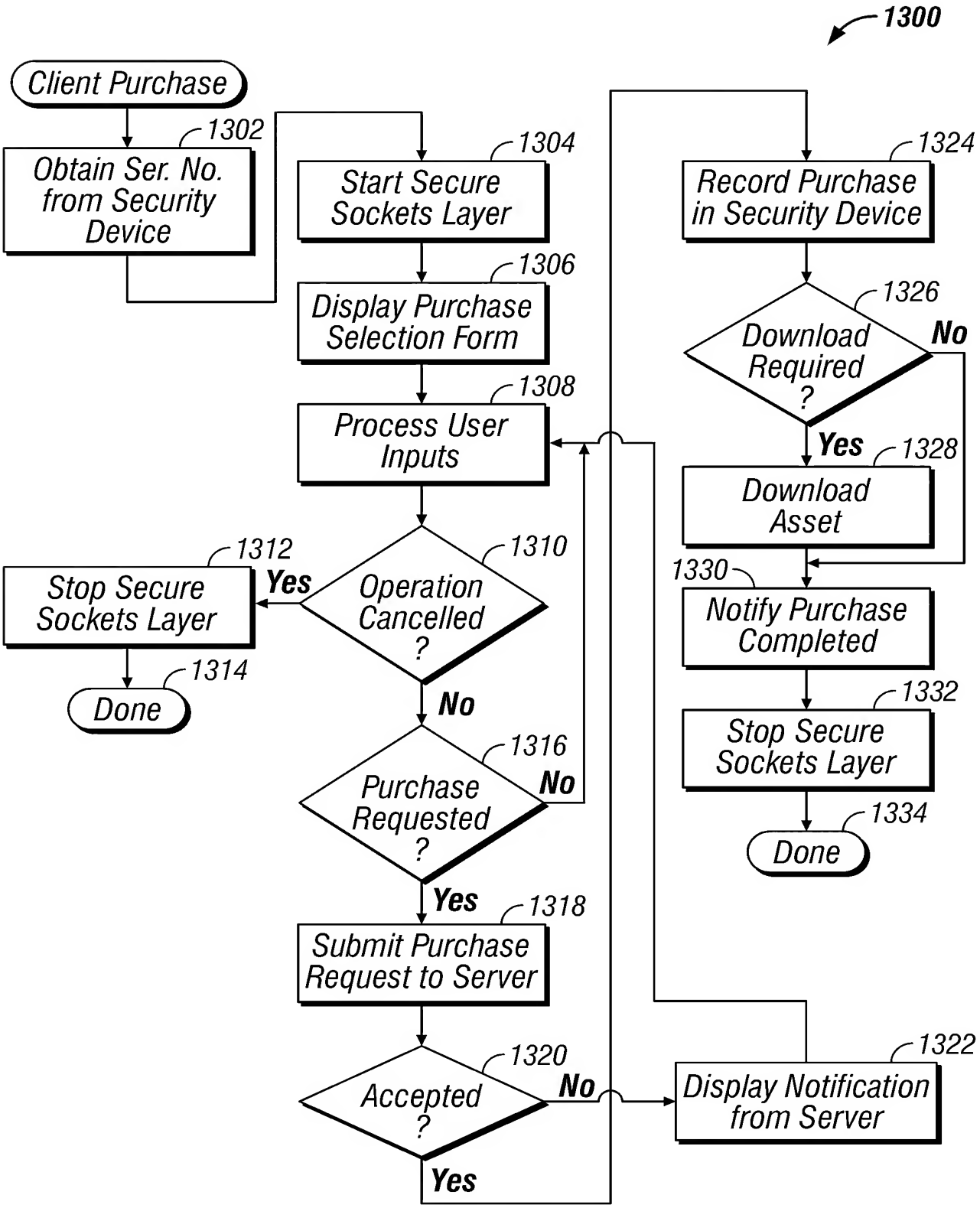

1300
Client Purchase
1302
Obtain Ser. No. from Security Device
1304
Start Secure Sockets Layer
1306
Display Purchase Selection Form
1308
Process User Inputs
1310
Operation Cancelled ?
Yes
1312
Stop Secure Sockets Layer
1314
Done
No
1316
Purchase Requested ?
No
Yes
1318
Submit Purchase Request to Server
1320
Accepted ?
No
Yes
1322
Display Notification from Server
1324
Record Purchase in Security Device
1326
Download Required ?
No
Yes
1328
Download Asset
1330
Notify Purchase Completed
1332
Stop Secure Sockets Layer
1334
Done

FIG. 13a

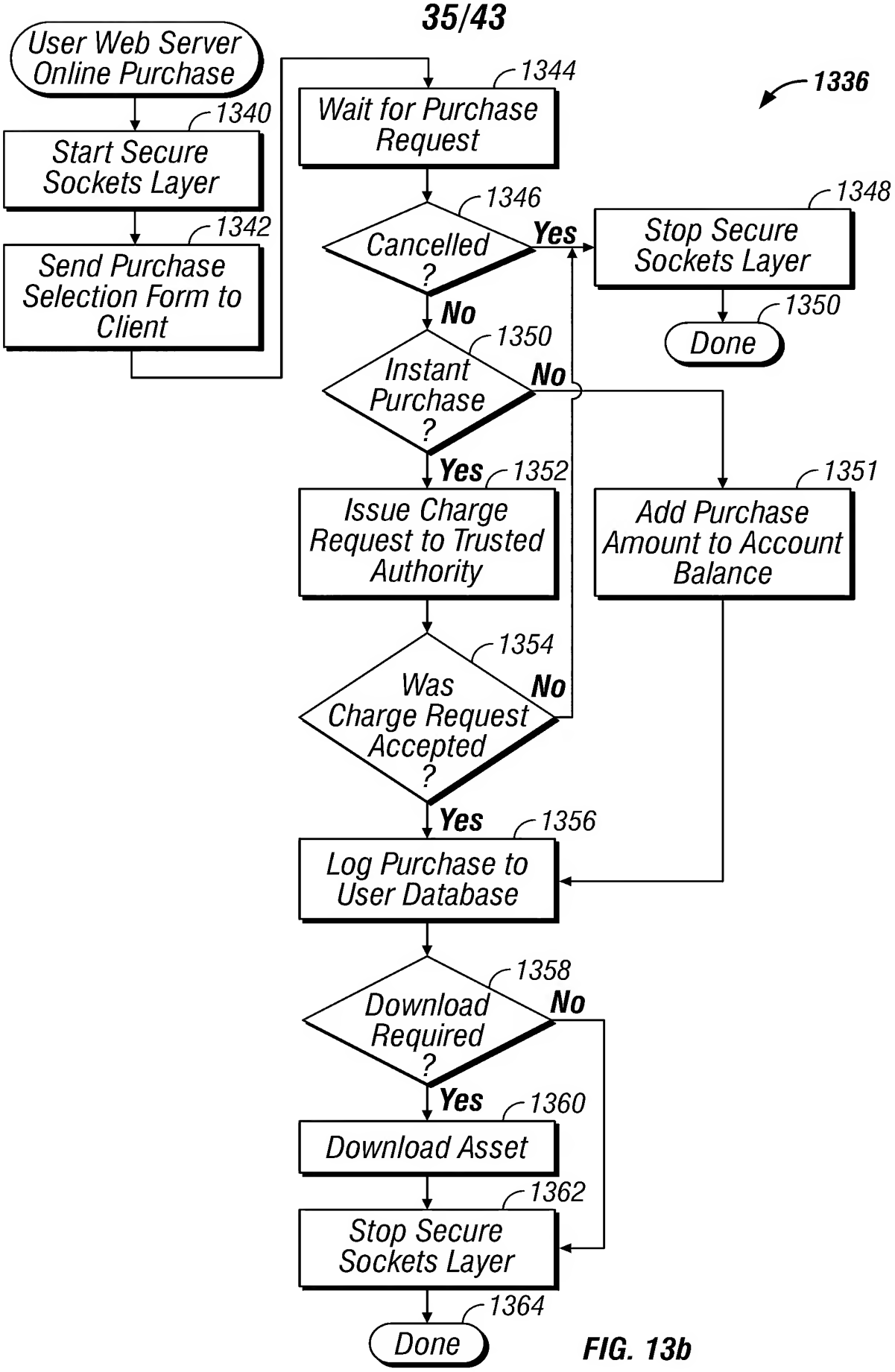
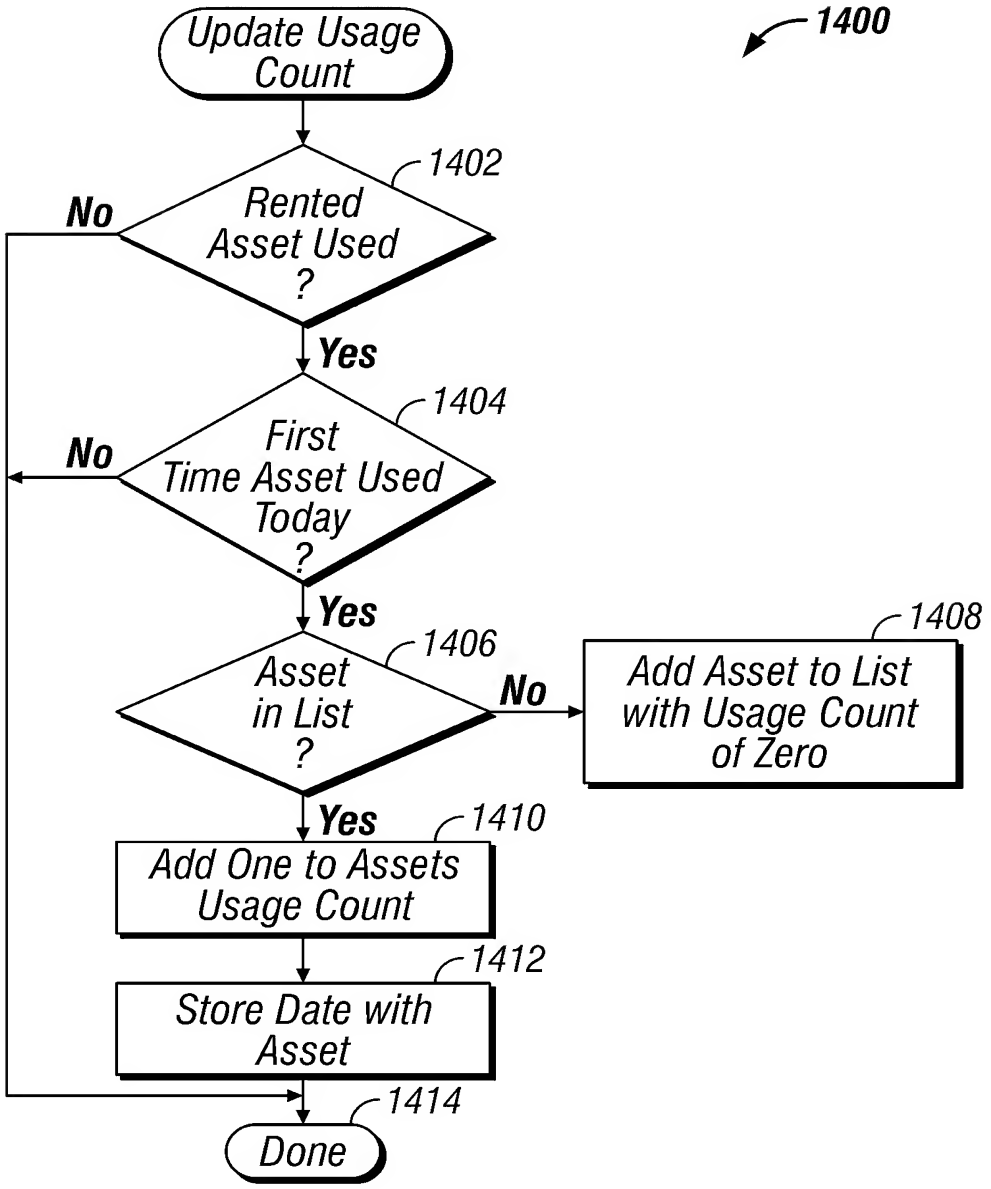

User Web Server Online Purchase
1340
Start Secure Sockets Layer
1342
Send Purchase Selection Form to Client
1344
Wait for Purchase Request
1336
1346
Cancelled ?
Yes
1348
Stop Secure Sockets Layer
1350
Done
No
1350
Instant Purchase ?
No
Yes
1352
Issue Charge Request to Trusted Authority
1351
Add Purchase Amount to Account Balance
1354
Was Charge Request Accepted ?
No
Yes
1356
Log Purchase to User Database
1358
Download Required ?
No
Yes
1360
Download Asset
1362
Stop Secure Sockets Layer
1364
Done

FIG. 13b



Asset Usage Count List 1102

Title Rented Asset 1403	Dates Asset Used 1405	Usage Count/ Total # Days 1407
$Title_1$	$Date_{11}$ ⋮ $Date_{N1}$	$Total_1$
⋮	⋮	⋮
$Title_N$	$Date_{N1}$ ⋮ $Date_{NN}$	$Total_N$

FIG. 14a

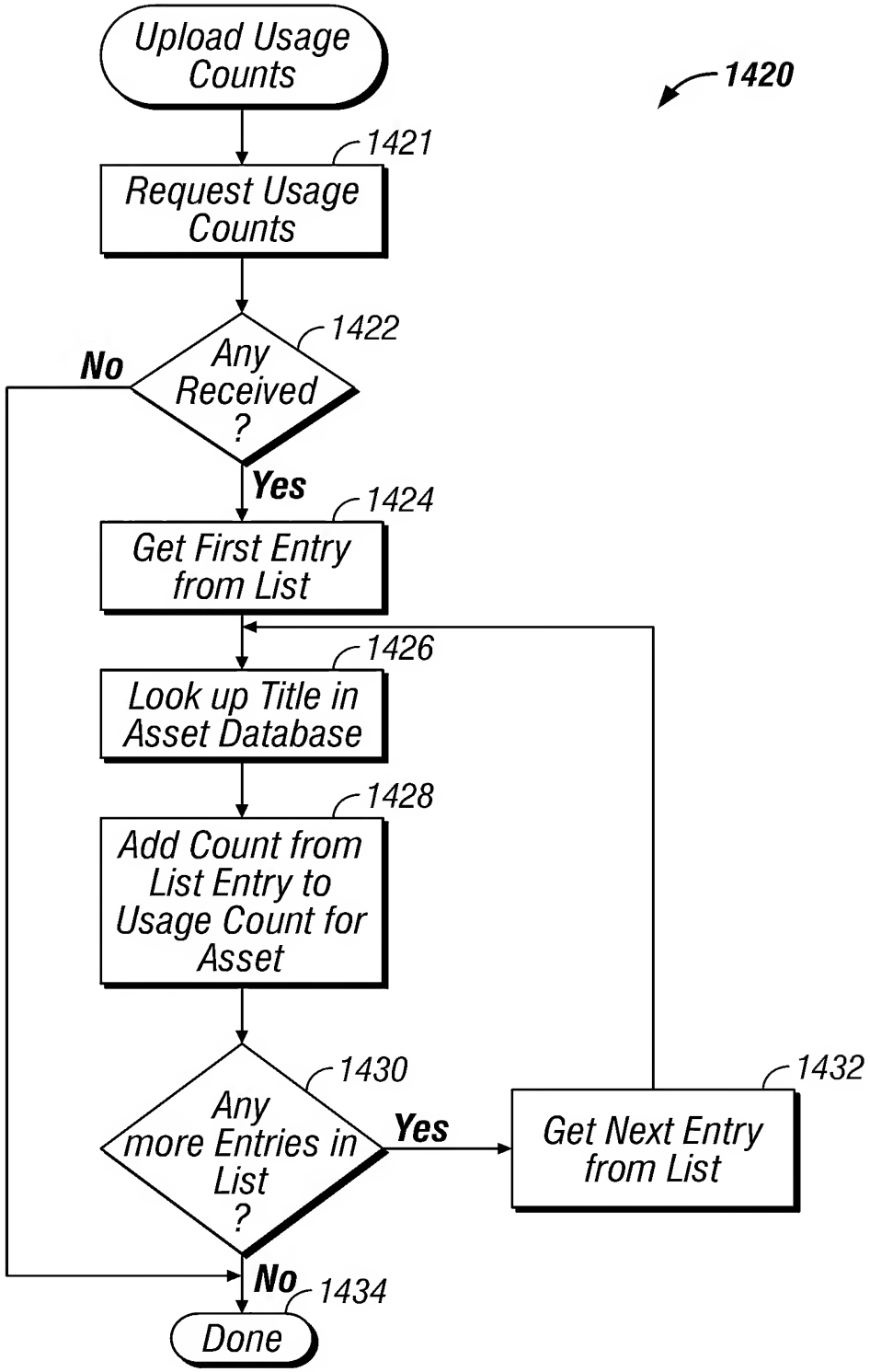

Upload Usage Counts
1420
1421
Request Usage Counts
1422
Any Received ?
No
Yes
1424
Get First Entry from List
1426
Look up Title in Asset Database
1428
Add Count from List Entry to Usage Count for Asset
1430
Any more Entries in List ?
Yes
1432
Get Next Entry from List
No
1434
Done

FIG. 14b

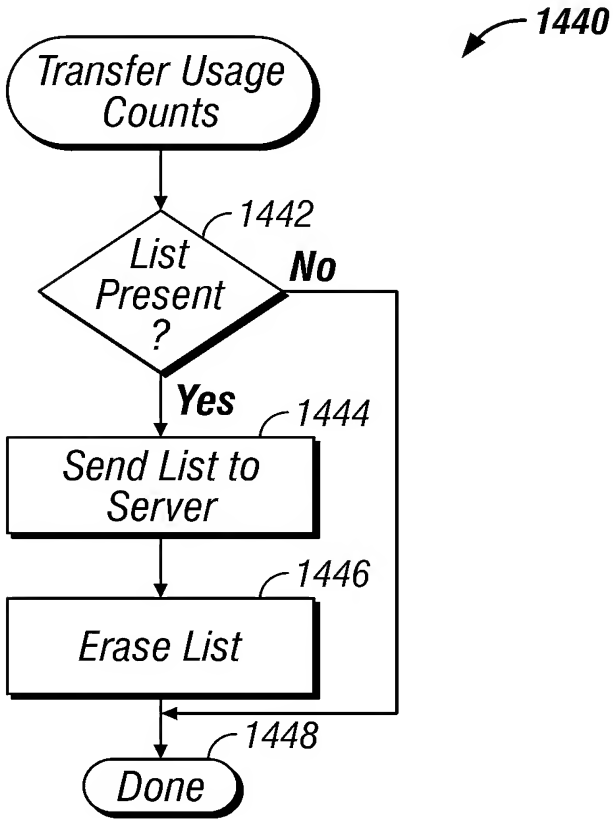

1440
Transfer Usage Counts
1442
List Present ?
No
Yes
1444
Send List to Server
1446
Erase List
1448
Done

FIG. 14c

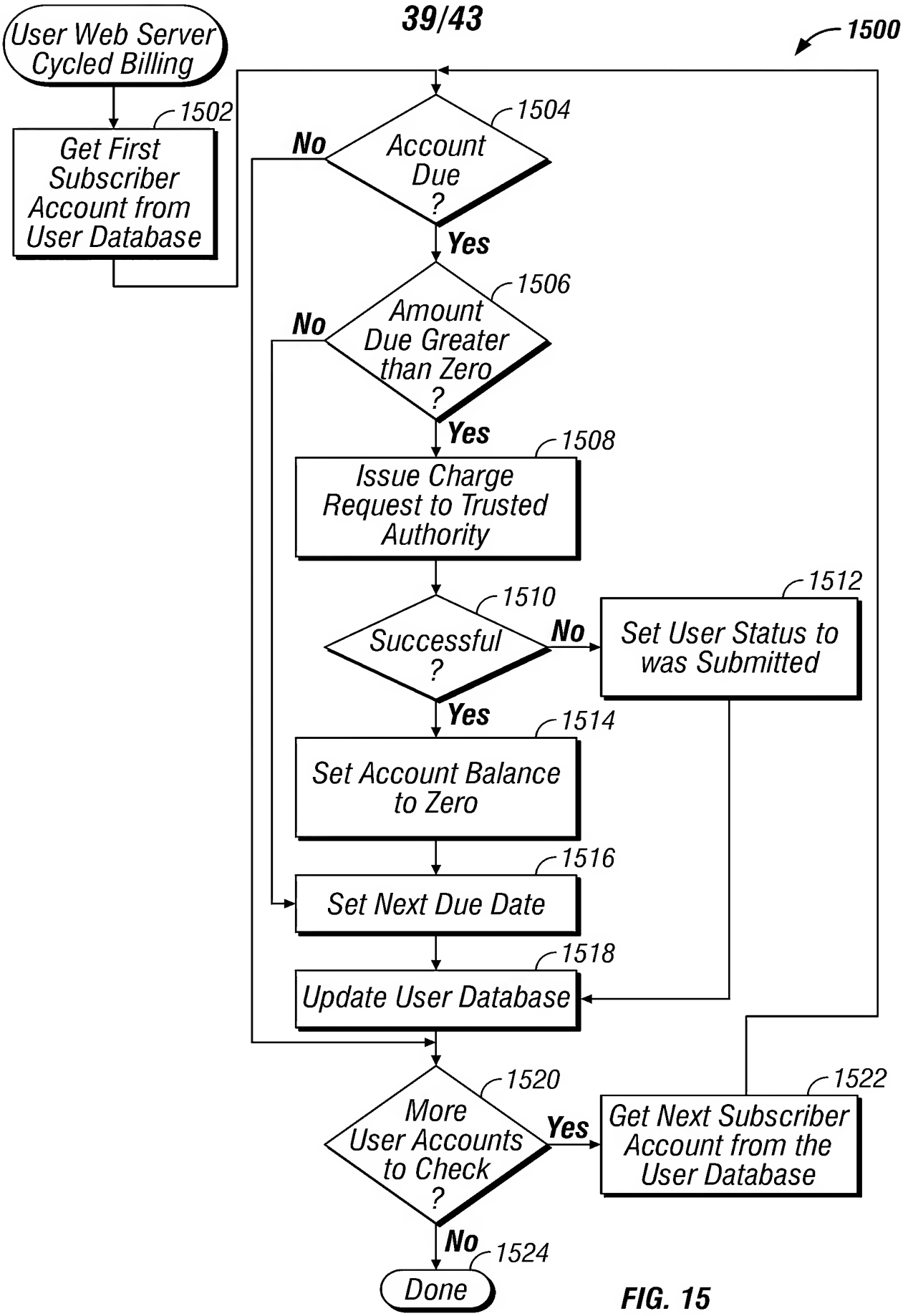

1500
User Web Server Cycled Billing
1502
Get First Subscriber Account from User Database
1504
Account Due ?
No
Yes
1506
Amount Due Greater than Zero ?
No
Yes
1508
Issue Charge Request to Trusted Authority
1510
Successful ?
No
Yes
1512
Set User Status to was Submitted
1514
Set Account Balance to Zero
1516
Set Next Due Date
1518
Update User Database
1520
More User Accounts to Check ?
Yes
No
1522
Get Next Subscriber Account from the User Database
1524
Done

FIG. 15

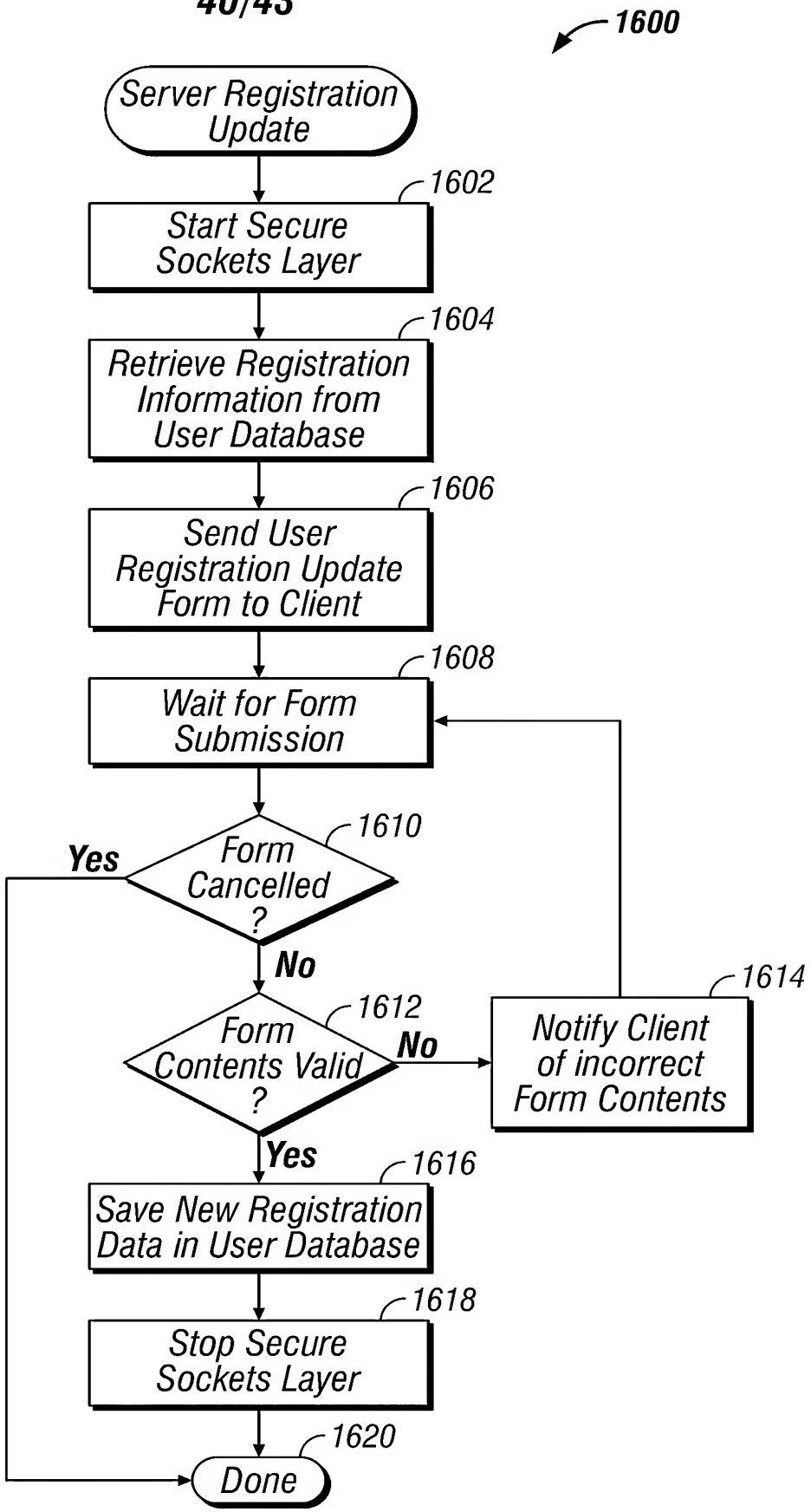

1600
Server Registration Update
1602
Start Secure Sockets Layer
1604
Retrieve Registration Information from User Database
1606
Send User Registration Update Form to Client
1608
Wait for Form Submission
1610
Form Cancelled ?
Yes
No
1612
Form Contents Valid ?
No
1614
Notify Client of incorrect Form Contents
Yes
1616
Save New Registration Data in User Database
1618
Stop Secure Sockets Layer
1620
Done

FIG. 16

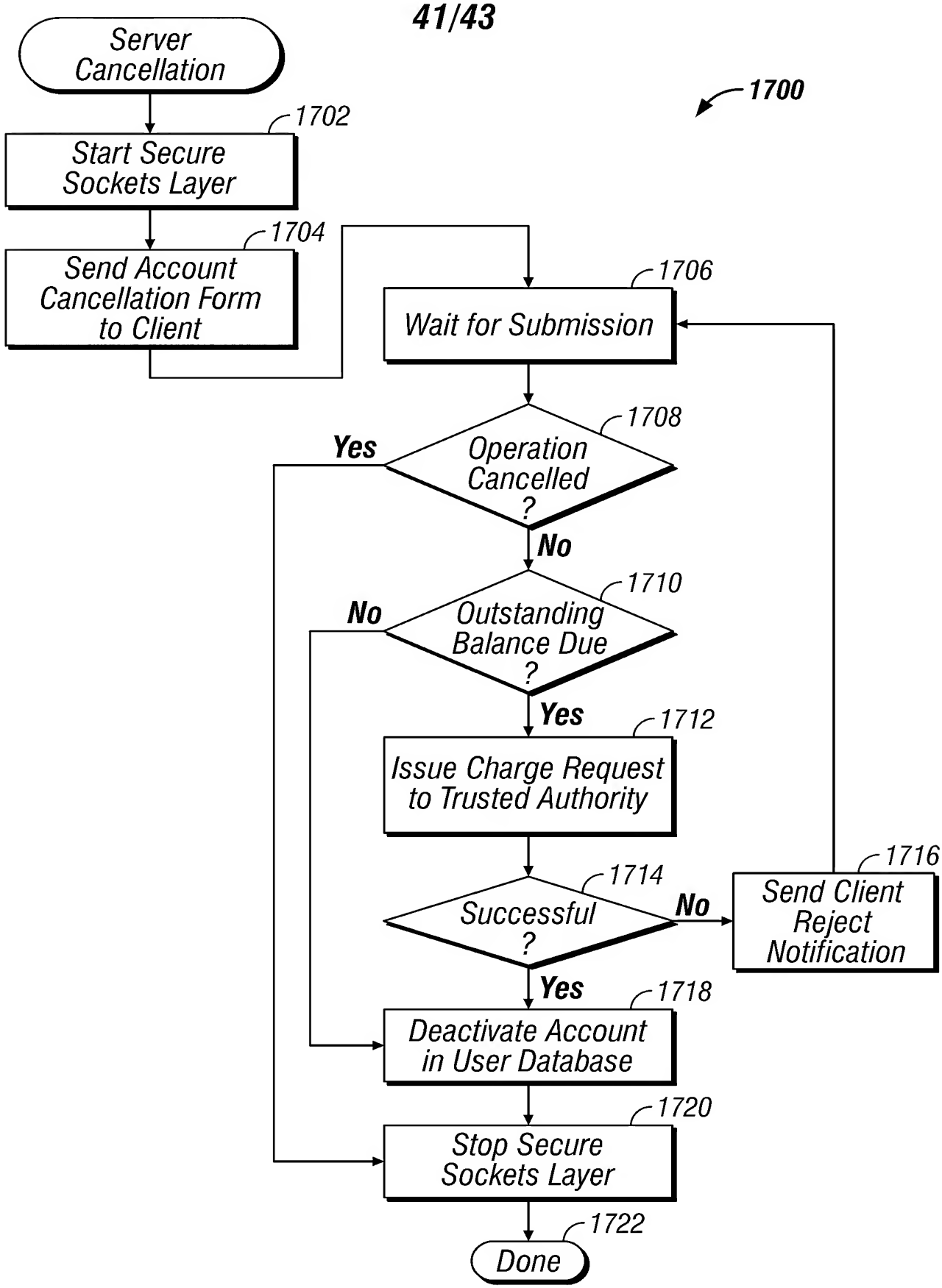

Server Cancellation
1700
1702
Start Secure Sockets Layer
1704
Send Account Cancellation Form to Client
1706
Wait for Submission
1708
Operation Cancelled ?
Yes
No
1710
Outstanding Balance Due ?
No
Yes
1712
Issue Charge Request to Trusted Authority
1714
Successful ?
No
1716
Send Client Reject Notification
Yes
1718
Deactivate Account in User Database
1720
Stop Secure Sockets Layer
1722
Done

FIG. 17

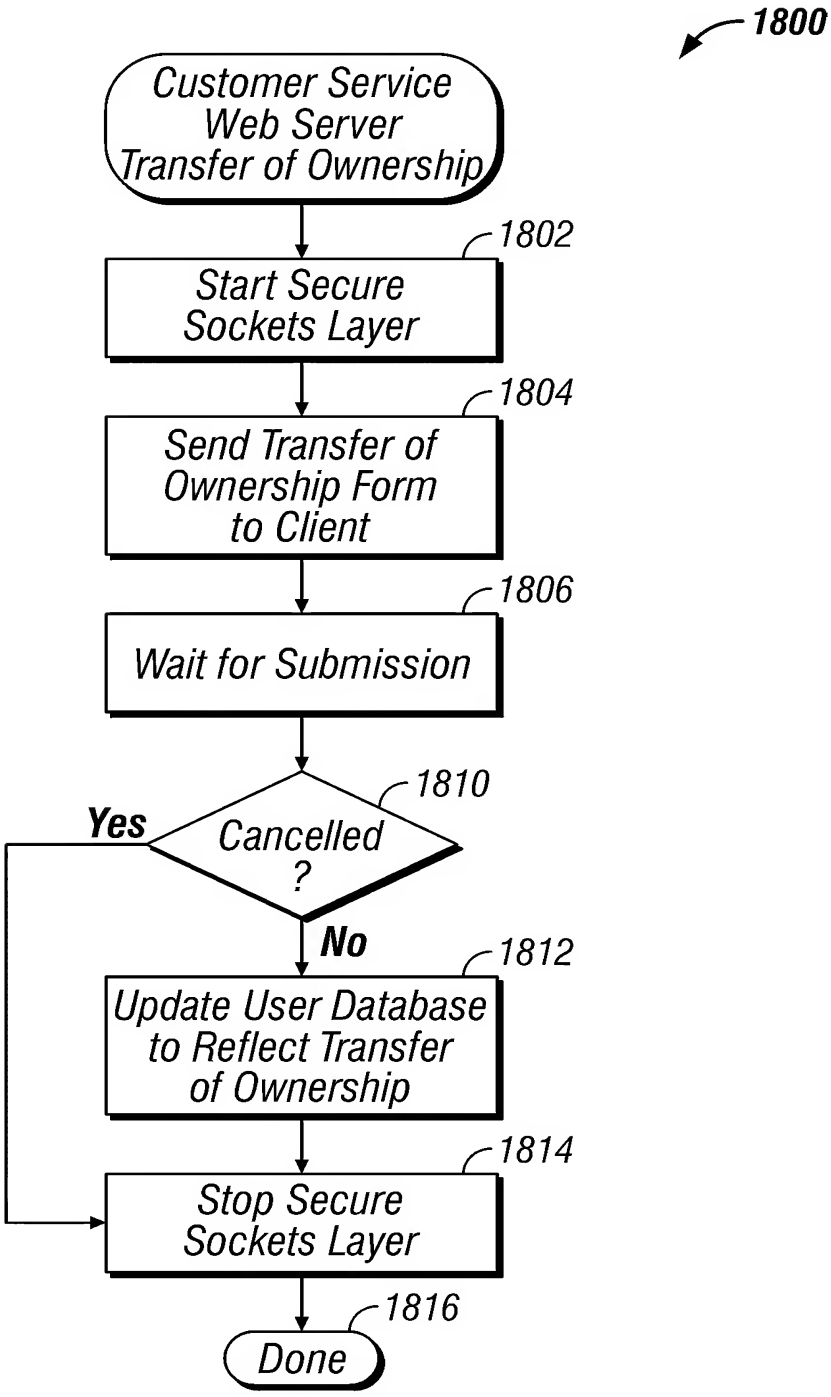

1800
Customer Service Web Server Transfer of Ownership
1802
Start Secure Sockets Layer
1804
Send Transfer of Ownership Form to Client
1806
Wait for Submission
1810
Yes
Cancelled ?
No
1812
Update User Database to Reflect Transfer of Ownership
1814
Stop Secure Sockets Layer
1816
Done

FIG. 18

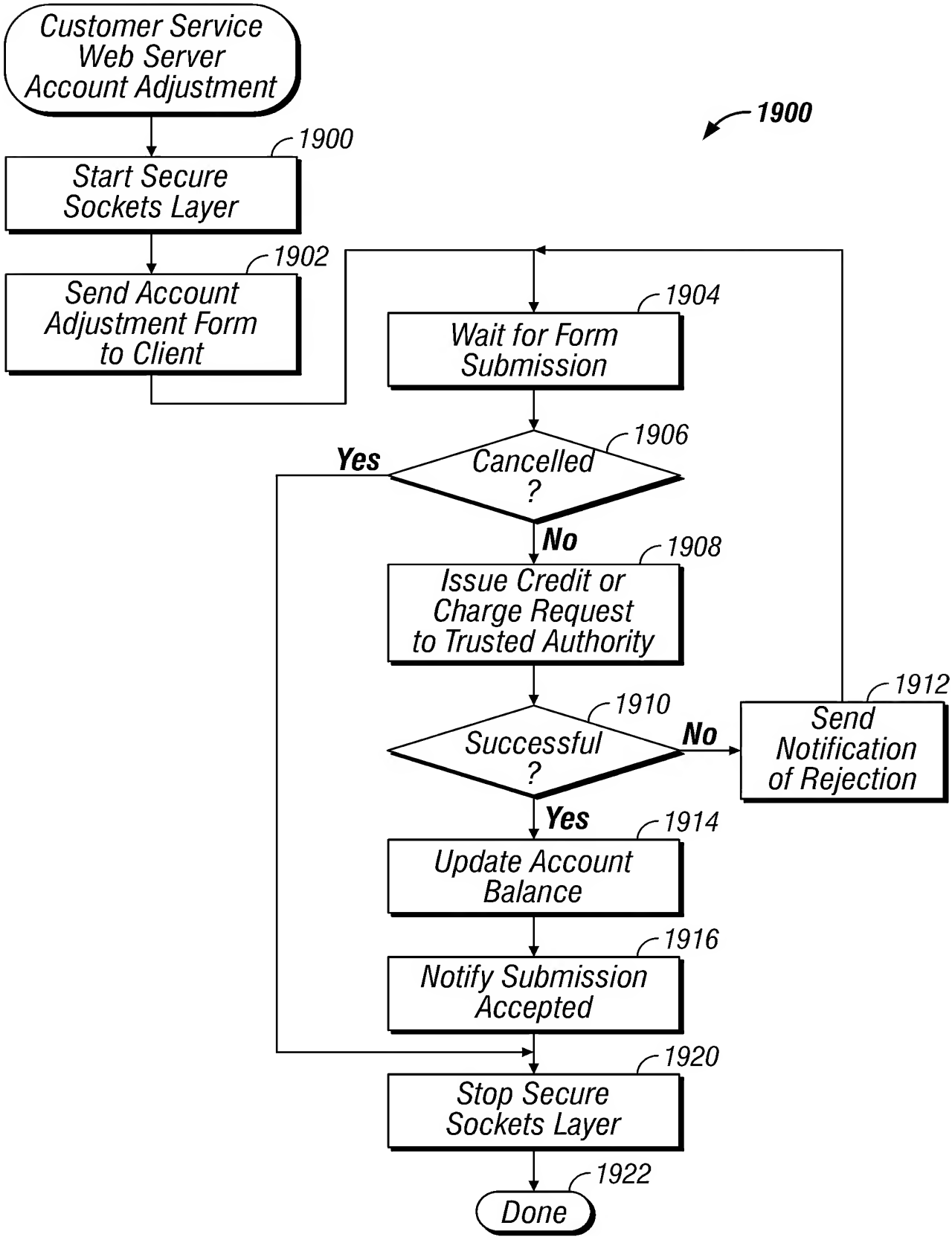

Customer Service Web Server Account Adjustment
1900
1900
Start Secure Sockets Layer
1902
Send Account Adjustment Form to Client
1904
Wait for Form Submission
1906
Cancelled ?
Yes
No
1908
Issue Credit or Charge Request to Trusted Authority
1910
Successful ?
No
1912
Send Notification of Rejection
Yes
1914
Update Account Balance
1916
Notify Submission Accepted
1920
Stop Secure Sockets Layer
1922
Done

FIG. 19